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**Psychotic like experiences in children: an examination of associated psychological factors.**

Ames, Catherine

*Awarding institution:*  
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**Volume I**

**SERVICE-EVALUATION PROJECT**

**AND**

**MAIN RESEARCH PROJECT**

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Catherine S. Ames

Thesis submitted in partial fulfilment of the degree  
of Doctorate in Clinical Psychology

Institute of Psychiatry, King's College London

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# **SERVICE-EVALUATION PROJECT**

## **Developing a Mindfulness Based Cognitive Therapy Service for Young People**

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Project Supervisor: Eleanor Leigh

Group Therapists: Patrick Smith, Eleanor Leigh and  
Susanna Payne

Group Therapists Supervisor: Paul Chadwick

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## **Abstract**

Mindfulness Based Cognitive Therapy (MBCT) has been shown to be effective in preventing relapse of depression in adults who have experienced multiple episodes of depression and is recommended in the NICE guidelines (2009). More recent evidence has also indicated its efficacy in helping adults who are actively depressed.

Increasing numbers of young people are diagnosed with depression. Depression is a disorder characterised by a recurrent course and there is notable continuity of depression into adulthood. Depression in children and young people is associated with significant impairment. This is of concern in terms of individual well-being and the future burden of a recurring mental health problem on the health and economic systems of the country.

MBCT has been adapted for use with children and adolescents and has been shown to be feasible and acceptable in community and clinical settings.

The research reported here examines the feasibility of establishing MBCT group therapy provision in National and Specialist CAMHS Mood Disorder Clinic for adolescents with depression. It also provides a pilot analysis of the efficacy of an MBCT group for young people who have received a course of psychological therapy but who present with residual symptoms and are at high risk of relapse.

Treatment completers (n=3) report satisfaction with the therapy and qualitative analysis of feedback interviews with them provides areas for future development of this service. Pilot analysis revealed reduction in levels of depressive symptoms between pre and post treatment, alongside positive change in measures of mindfulness skills and cognitive processes such as rumination.

Group MBCT was seen to be feasible and acceptable within this setting using quantitative and qualitative methodology. Information for the service on potential areas for future development is provided.

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## **1. Introduction**

### **1.1 Background and rationale of the project**

NICE guidelines currently recommend psychological therapy as the first-line treatment of depression in children and young people (NICE, 2005). However, and in contrast to the evidence base for psychological therapies in adults which continues to grow, the evidence amongst children and young people is discordant and, in the main, disappointing (Weisz et al., 2006; Klein, Jacobs, & Reinecke, 2007; Semple, Lee & Miller, 2006). Many remain symptomatic at the end of treatment (Wood et al., 1996), and even amongst those who respond to psychological therapies most gains are not maintained at one-year follow-up (Wood et al., 1996; Brent et al., 1997).

NICE guidelines highlight the poor long-term prognosis for young people in clinic and community samples, with high rates of recurrence of the disorder (Birmaher, Arbelaez, & Brent, 2002). There is considerable continuity of depression into adulthood (Costello et al., 2002), with 30% of adults with depression initially diagnosed in childhood or adolescence (Fombonne et al., 2001a & b). With successive depressive episodes, psychosocial factors that are smaller in magnitude are sufficient to trigger a further episode (Kendler et al., 2000; Kendler et al., 2001) indicating that vulnerability to future episodes of depression increases with each experience of depression. In addition, depression has been identified as a major source of expenditure both in the health system and in the wider economy through the impact that it has on people's health and well-being and on their ability to work.

Given the chronic, recurrent nature of depression, identifying effective interventions to reduce psychological vulnerability factors to episodes (defined by NICE guidelines as high levels of sub-syndromal symptoms or two previous episodes of depression) is a priority in the overall management of the disorder. The NICE guidelines for depression in children and young people (2005) recognise this and recommend providing an unspecified psychological therapy for those at risk of relapse. Unfortunately there remains little research exploring prevention of relapse and reduction of persistent symptoms among young people.

NICE guidelines for the treatment of depression in adults (2009) make two recommendations for the treatment of people who are considered to be at significant risk of relapse; individual CBT and group based Mindfulness Behavioural Cognitive Therapy (MBCT; for those who have experienced at least two episodes of depression). MBCT is proposed to reduce the risk of relapse through increasing individuals' awareness of the thinking styles and ruminative cycles that make them vulnerable to episodes. It is suggested that MBCT skills allow individuals to respond

differently to dysphoric mood, rather than engaging in unhelpful patterns of thinking and responding that maintain and exacerbate the low mood.

Nolen-Hoeksema (1991) proposed that a particular thinking style, rumination, is implicated in the onset and maintenance of depression. Rumination is a mode of “responding to distress that involves repetitively and passively focusing on symptoms of distress and on the possible causes and consequences of these symptoms” (Nolen-Hoeksema, Wisco & Lyubomirsky, 2008; p. 400). Among adults, engaging in this thinking style especially in periods of low mood has been found to lead to increased vulnerability to further episodes of depression (Segal, Williams, Teasdale & Gemar, 1996; Teasdale, 1988; Teasdale, Segal & Williams, 1995).

Research evidence is emerging to indicate that rumination may play a comparably toxic role in depression among young people (Roelofs et al, 2009; Kuyken et al, 2006; Abela, Vanderbilt, & Rochon, 2004; Abela, Brozina, & Haigh, 2002). This suggests that rumination could be a valid target of treatment among young people with residual symptoms of depression, as well as adults, and points to the potential value of MBCT among this population.

## **1.2 What is Mindfulness-Based Cognitive Therapy (MBCT)?**

MBCT was developed by Segal, Williams & Teasdale (2002) to target cognitive processes implicated in relapse in depression (Teasdale, 1988). MBCT aims to enable participants to identify thinking patterns, and rumination in particular, that are related to vulnerability to depression, to recognise triggers for depression and to avoid responding to these automatically. MBCT has been developed to include the meditative and group delivery principles of Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1982). MBSR has been found to be effective in the management of chronic pain and stress as well as mood disorders (Kabat-Zinn, 1990; Kabat-Zinn, Lipworth & Burney, 1985; Kabat-Zinn et al., 1992). Meditation is taught formally, and through incorporating into daily routines, to help participants become aware of, and change their relationship with difficult thoughts, feelings, and bodily sensations. The meditation in MBCT and MBSR is designed to be non goal-oriented and while it clearly draws on Buddhist meditation traditions it is not, in the form of mindfulness, based within a spiritual or religious tradition. In MBCT, the MBSR components are combined with elements of cognitive behavioural therapy for depression (Beck, Rush, Shaw, & Emery, 1979).

## **1.3 Effectiveness of MBCT**

Trials of MBCT with adults have shown that it can reduce residual depressive symptoms (Kingston et al., 2007). Further, evidence suggests MBCT can reduce relapse rates in people who

have had repeated episodes of depression (Ma & Teasdale, 2004; Teasdale et al., 2000) with relapse rates lower than those seen in a comparison group prescribed anti-depressant medication (Kuyken et al., 2008). MBCT has also recently been evaluated as a treatment for adults who are currently symptomatic (Barnhofer et al., 2009; Kenny & Williams, 2007).

MBCT has recently been extended and adapted for use with children and adolescents (for reviews see Burke, 2009 and Greco & Hayes, 2008). Initial evidence indicates that it can be used with young people (Thompson & Gauntlett-Gilbert, 2008), and that it leads to significant reduction in symptoms of anxiety in a community samples (Semple et al., 2005; Semple, Lee, Rosa & Miller, 2009). Recent research with a community sample has reported reductions in rumination, intrusive thoughts and emotional arousal (Mendelson et al., 2010). Previous randomised control trials have shown effectiveness but have been in community child (Semple et al 2009) or mixed psychiatric adolescent (Biegel, Brown, Shapiro & Schubert, 2009) samples. To date no study has been published which has investigated the efficacy of MBCT among adolescents with subclinical symptoms of depression or at risk of relapse.

#### **1.4 Developing an MBCT service in CAMHS**

The Mood Disorder Clinic, National & Specialist Child & Adolescent Mental Health Services in the South London and the Maudsley NHS Foundation Trust currently provides NICE recommended individual therapy for young people with depression.

Individual psychological therapies offered for the treatment of mood disorders are primarily Cognitive Behavioural Therapy (CBT) and Interpersonal Therapy (IPT). Continuation CBT and booster sessions are provided (c.f. Rohde et al, 2008).

The cost of continued individual therapy, the risk of a revolving door of discharge and re-referral and the risk of these young people remaining in mental health services as they progress into adulthood, highlights the need to develop the service to provide an evidence based, effective and cost-efficient means of reducing relapse rates in this group of young people.

Given, the commonality in ruminative processes in adults and adolescents discussed above, the strong body of evidence supporting the use of MBCT in adults with mood disorders and the growing evidence of its acceptability and efficacy in young people, there is a need to explore the use of MBCT among this group of young people vulnerable to experiencing further debilitating depressive episodes. The weight of evidence in the adult literature suggests MBCT would be effective (Kingston et al., 2007; Ma & Teasdale, 2004; Teasdale et al., 2000) in this group. However, to our knowledge, there has been no published report of an MBCT group intervention for referred adolescents with symptoms of depression.

### **1.5 Aims/Objectives**

This study sought to evaluate the feasibility of developing MBCT provision for young people who have received individual psychological therapy at the National and Specialist Mood Disorder Clinic and who continue to have residual symptoms of depression post-treatment.

In addition, the study provided the opportunity to conduct a pilot evaluation of the efficacy of MBCT in reducing symptoms of depression in adolescents, and to measure the impact of MBCT on cognitive factors implicated in depressive relapse.

## **2. Method**

### **2.1 Eight week course outline**

#### **2.1.1 Treatment Protocol**

Participants attended a pre-course session where the rationale of the treatment was outlined and their suitability for MBCT confirmed. Parents were also invited to attend a parent pre-course session, outlining the treatment rationale and expectations for homework and attendance

The 8 week MBCT course took place at the Michael Rutter Centre, in after school hours. The full 8 week protocol can be seen in Table 1. This protocol was based primarily on the 8 week adult MBCT programme (Williams, Teasdale, Segal & Kabat-Zinn, 2007), though it was also informed by the 12 week MBCT-Children protocol (MBCT-C, Semple & Lee, 2008). Many of the activities and adaptations suggested by Semple & Lee (2008) for use with younger children were used. However not all of these are suitable for use with adolescents, and so we were also guided by the 8 week adolescent programme developed by Bögels, Hoogstad, van den Dun, Schutter and Restifo (2008). The protocol used here was designed to make mindfulness as accessible as possible to these young people through our choice of activities, for example the use of visual illusions to illustrate processes of describing and judging as well as directing attention. Studies with adolescents have used MBCT or MBSR programmes lasting 6 weeks (Bootzin & Stevens, 2005) and 8 weeks (Bögels et al., 2008; Zylowska et al., 2007). There is not yet a consensus on the most effective length of intervention for adolescents. The intervention delivered here was designed to maximise opportunity to deliver MBCT (c.f. Williams, Teasdale, Segal & Kabat-Zinn, 2007) through the choice of an 8 week rather than 6 week programme.

#### **2.1.2 Course therapists**

MBCT differs from many psychological therapies in that there is a requirement that group therapists are active mindfulness practitioners. This requirement was recently formalised in a consensus statement released by the UK Mindfulness Trainers' network. The group therapists comprised three Clinical Psychologists and one Clinical Psychologist in Training. Each of the three Clinical Psychologists had participated in at least one full 8 week MBCT course. The group therapists received supervision from a clinician with extensive experience in the development and supervision of mindfulness based therapies.

## 2.2 Assessments

Participants were assessed at four time points (pre-treatment, mid-treatment, end-treatment and at 1 month follow-up). At each time point the assessment battery comprised self report measures of symptoms, mindfulness skills, quality of life and putative mediators. Additional measures were included in the assessment battery at end-treatment (life events interview) and follow up (quantitative and qualitative measures of acceptability).

### 2.2.1 Measures

Outcome measures were selected to assess the development of mindfulness skills, and the reduction of symptoms of depression and anxiety. Measures for worry and the cognitive processes underlying worry were included as previous studies with children and adolescents have reported reductions in symptoms of anxiety and this study provides opportunity to for a preliminary investigation of the impact of mindfulness on cognitive processes associated with symptoms of worry as well as depression. Although it is outside the scope of the data collected here to conduct an analysis of the relationship between outcome measures and putative mediating processes, measures of these processes (rumination and worry) are included to provide an initial indication of whether these processes are impacted by the development of mindfulness, and whether subsequent work should seek to further explore these relationships.

A measure of perceived quality of life is included as a potentially more sensitive measure of the impact of mindfulness on young people's daily lives, and to reflect the hypothesis that mindfulness practice may bring wider benefits than just symptom reduction.

Finally, treatment outcome has been reported to predicted by disappointing life events, (Wilkinson, Dubicka, Kelvin, Roberts & Goodyear, 2009) and disappointment or loss events can trigger relapse. The life events interview described by Wilkinson et al. is used here to record possible moderators of treatment effect.

**Table 1: MBCT adolescent 8 week session outline**

	Aims	Agenda	Exercises	Home Practice
Pre-course parent meeting	Introduction and experience of mindfulness	Review evidence Rationale Course structure and time commitment Parental role in supporting their child	Mindful eating exercise	
Pre-course young people meeting	Opportunity to answer questions Determine commitment and motivation to course	Rationale Course structure and time commitment		
1. Tuning In  A new way of looking at the world: day in the life of an alien.	Introduction and orientation Introducing regular formal practice	Group rules Orientation to mindfulness Info about homework and barriers to practice Mindful daily activities	Eating a strawberry Awareness of the breath: 2 x 3-min breathing space, with discussion in between	Do a daily activity mindfully CD with 3-min breathing space
2. Two Sides to the Same Coin  Different views from different perspectives.	Help YP identify thoughts, feelings, behaviour Encouraging present-orientation (in the body)	Differentiating T, F, B (snow / hot weather example) - Where would MBCT fit it? Introduction to body scan Introduction to pleasant event recording Vote for music next week	Breathing space and enquiry Body Scan + discussion End: breathing space, no enquiry	Pleasant events diary Body scan CD for daily practice
3. Listen Up  Wherever you are, there you are.	Mindfulness in all the senses Full review of present-orientation in the body	Introduction to mindfulness in all the senses Mindful hearing (holding on/letting go) Review of body scan Introduction of unpleasant event recording	Breathing space and enquiry Receptive listening: listening to a piece of music Body scan End: breathing space, no enquiry	Add unpleasant events to the pleasant events diary (at least 1) 3-min breathing space CD daily practice
4. Seeing is Believing	Mindfulness in all the senses Continuing regular formal practice	Mindful seeing and smelling Practising directing attention Differentiating judging from describing	Breathing space and enquiry Guided imagery (old lady/young woman) Optical illusions (Magic eye) Mindful smelling (smells in envelopes – tea, cereal, orange)	Pleasant and unpleasant events diary Body scan CD for daily practice

			peel, digestives)) End: breathing space, no enquiry	
5. The Five Senses	Mindfulness in all the senses Encouraging present-orientation and acceptance	Mindful movement Staying in the present, accepting difficult feelings	Breathing space and enquiry Mindful walking x 2 Photographs of people's reactions to bees and bee swarms (accepting difficult feelings) End: breathing space, no enquiry	Daily mindful walking Pleasant and unpleasant events diary
6. Thoughts are Not Facts	Discriminating thoughts from facts Accepting difficult thoughts/feelings in the present	Noticing and staying with difficult thoughts/ feelings in the present; acceptance	Breathing space and enquiry Breath and body sitting meditation exercise (using breath as an anchor) Discussion focused on automatic thoughts End: breathing space, no enquiry	Use mindful awareness for negative event in the week and record Daily 3-min Breathing space Use of Breathing space for coping.
7. Putting mindfulness into practice.	Building mindfulness into everyday life	Discuss how to integrate mindfulness into everyday life Review of previous sessions Acceptance of experiences and mindfulness 3-minute breathing space to choose what to do. Identifying signs of relapse (action plan)	Breathing space and enquiry 30 minutes sitting practice, introduce a difficulty and notice its effects on the body and your reactions to it. Pleasure/mastery activities Small groups – begin developing action plans. End: breathing space, no enquiry	Experiment with alternative daily exercises: tick list of what they have tried – have a think about what works and when Action plan
8. Moving on Mindfully.	Concluding	Generalising mindfulness to everyday life Exploring and sharing reflections Graduation ceremony Stone meditation	Breathing space and enquiry Make an individual one-month plan using a pro-forma End: breathing space, no enquiry	



---

*Outcome measures*

## 1. Moods and Feelings Questionnaire (MFQ; Angold et al., 1995).

The MFQ is a 33 item questionnaire used to measure the level of residual symptoms. It is used here as a baseline and outcome measure.

## 2. Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger &amp; Borkovec, 1990)

The PSWQ is a 14 item questionnaire used to measure worry in participants.

## 3. Child Acceptance and Mindfulness Measure (CAMP; Greco, Dew &amp; Ball, 2005)

The CAMP is a 25 item measure of mindfulness which assesses the degree to which children and adolescents observe internal experiences, act with awareness and accept internal experiences without judging them. It is used to index the degree to which interventions teach participants mindfulness skills.

## 4. Paediatric Quality of Life Enjoyment and Satisfaction Questionnaire (PQ-LES-Q; Endicott, Nee, Yang &amp; Wohlberg, 2006)

This 15 item questionnaire measures quality of life and enjoyment on 5 point Likert scales. This taps adolescent life experiences that are not measured by more symptom oriented clinical measures.

*Process measures*

## 1. The Ruminative Response Scale (RSQ; Nolen-Hoeksema &amp; Morrow, 1991)

The RSQ measures rumination. It was adapted by Meiser-Stedman et al., (2007) for use with British school aged children. The scale has 22 items which are each rated on a four point Likert scale which requires participants to indicate how often they tend to engage in the ruminative behaviour (0 never to 3 always).

## 2. Composite Worry Process Questionnaire (CWPQ)

The CWPQ includes short forms of four scales (Intolerance of Uncertainty Scale, Buhr & Dugas, 2002; Why worry II, Dugas & Robichaud, 2007; Cognitive Avoidance Questionnaire, Dugas & Robichaud, 2007 and the Negative Problem Orientation Questionnaire, Robichaud & Dugas, 2005) adapted for children (Fialko & Perrin, submitted). Each of the 4 scales is comprised of 5 questions. This is used as a measure of the underlying cognitive processes thought to underlie worry .

## 3. Life Events Interview (LEI; Wilkinson, Dubicka, Kelvin, Roberts &amp; Goodyear, 2009)

In adolescents treated for depression life events are predictive of outcome (Wilkinson et al, 2009). The LEI asks recent life events (disappointments, losses and dangers to self and others) which are rated on their impact and chronicity by participants. Events that had a moderately or

severely undesirable impact and that had lasted for 2 weeks are counted and summed to provide a total life events score.

### *Measures of acceptability*

#### *Quantitative measures of acceptability*

A feedback questionnaire was given to adolescents post-treatment asking them to evaluate each component of the treatment on a 5-point Likert scale (see Appendix 1).

#### *Qualitative measures of acceptability*

Qualitative data was collected in individual semi-structured interviews (see Appendix 1 for interview schedule). The interview schedule was designed to elicit further information about the acceptability of using MBCT with this group, in order to inform future development of the service. Questions were focused on perceived benefits of the intervention, useful aspects of the course, barriers to attendance, ideas for adaptations for future groups and identification of anything that they had found unhelpful.

## **2.3 Participants**

### **2.3.1 Inclusion Criteria**

Young people (aged 13-18) were recruited from the Mood Disorder Clinic (National & Specialist CAMHS service) situated in the Michael Rutter Centre, Maudsley Hospital. All participants were registered patients under the care of the Mood Disorder Clinic.

Participants had received psychological treatment for a mood disorder or low mood but continued to present with residual symptoms of depression. Residual symptoms of depression are suggested by a score between 15 and 20 on the Mood and Feelings Questionnaire – Self Report (MFQ; Daviss et al., 2006; Wood, Kroll, Moore, & Harrington; 1995). A score of 29 or higher reflects the probable presence of major mood disorder. 15 is approximately 0.5 standard deviations above the mean of the group with no mood disorder in Daviss et al.'s research (no mood disorder mean 11.6, S.D. 9.9). Given the focus here on residual symptoms it is an appropriate level for the lower boundary of our inclusion criteria.

Suitability of potential participants was assessed by care co-ordinators. MFQ scores were used as one indicator of suitability, but circumstances, clinical history and current presentation were also taken into account.

### 2.3.2 Exclusion Criteria

Young people that presented with a high level of risk, as ascertained by clinical assessment; who were experiencing an acute episode of depression; with active substance misuse difficulties; or who had not completed one course of psychological therapy were excluded. Young people prescribed antidepressant medication were not excluded from the group.

### 2.3.3 Recruitment

Clinic patients are reviewed regularly (~ every 1-2 months) after completing a course of psychological therapy for a mood disorder or low mood. At these reviews, potential participants complete routinely administered questionnaires of depression symptoms (MFQ) and are clinically assessed by care co-ordinators.

When considered appropriate for inclusion in the group information sheets about the group and its evaluation were given to potential participants. This research and the associated documents had received ethical approval from the South West London REC 3 NHS National Research Ethic Committee (ref: 10/H0803/47). Information sheets and consent forms are attached as Appendices 2 and 3.

### 3. Results

#### 3.1 Participants

Five young people met inclusion criteria at the time of recruitment. See Table 2 for a brief description of these young people.

	Completers	Non-completers
Gender	3 female	2 female
Age	15-18	14 – 17
Previous treatment	2 x CBT 1 CBT and IPT	2 x CBT

**Table 2. Brief descriptive data for participants**

#### 3.2 Acceptability

The acceptability of MBCT as an intervention for depression in adolescence was assessed using both quantitative measures of attendance and satisfaction and qualitative measures of adherence and satisfaction.

##### 3.2.1 Quantitative

Five young people were recruited into the study. Three completed the program. Two participants left the study in the first three weeks. One left following a relapse into a major depressive episode and the other young person was unable to attend because of a complex family situation.

The three young people that completed the intervention all attended at least 75% of sessions (minimum of 6/8). Sessions were rescheduled to accommodate typical events of adolescence (exams, parents' evenings) and other barriers to attendance (heavy snow fall).

Satisfaction ratings provided by the three participants who completed the course can be seen in Table 3. All participants gave ratings of between 3 (a medium amount) and 5 (very) on measures of enjoyment both of the course and of being in a group, feeling understood by trainers and willingness to recommend to others with similar difficulties. Lower ratings were provided by two participants on measures of ability to practice at home and ease of attendance, and one participant gave a lower rating for perceived usefulness of the skills learnt. This participant had also provided a lower rating for ability to practice and for ease of attendance.

Participant	1	2	3
Enjoy the activities	4	5	4
Enjoy being in a group?	3	5	4
Able to practice?	2	4	2
Feel trainers understood your needs/difficulties?	4	5	5
Finding skills useful?	3	5	2
Easy to attend?	2	4	2
Recommend this group to another	3	5	5

**Table 3. Participant ratings of satisfaction.**

All rated on 5 point Likert scale with higher scores denoting more positive response

In summary, these ratings of satisfaction indicate an overall positive attitude towards the MBCT course. However, they highlight difficulties of adherence to homework practice as well as the logistical concerns of young people in attending groups. These issues are further explored below in the themes that emerged in individual semi-structured interviews with the young people.

### 3.2.2 Qualitative

Data from the semi structured interview was analysed for themes emerging within individual questions and subsequent discussion. Particular attention was paid to areas of consensus between participants and to topics pertinent to service development. 4 themes emerged, which will be described in turn below. These were beliefs about the benefits of mindfulness, difficulties experienced, thoughts about the content of the group and responses to being in a group. Finally, comments made by participants about logistical arrangements are reviewed.

#### *Beliefs about the benefits of mindfulness*

All participants expressed beliefs about mindfulness helping them to ‘slow down’ and to become more ‘aware’, particularly at times of stress;

*‘sometimes when you are at your most stressed this could be a good time to sit down, slow down and focus on breathing and physical feelings’*

*‘I’m not kind of quickly jumping onto things and panicking about them I guess. I don’t know just kind of noticing more’*

*‘I think it means to me, being aware of what your body is doing, for example I remember when we were doing exercises like walking mindfully and how nice it is to actually feel the floor on*

*your feet sometimes, and I think that's what being mindful is to me, just being aware of those little things that you don't usually pay attention to.'*

This change in awareness or pace was also expressed in approaches to daily activities by two participants;

*'I think just kind of noticing the small things you wouldn't usually just kind of helped to ummm kind of like brighten up my thoughts a but... it makes life more interesting... Taking enjoyment in small things like kind of even tapping a pencil on a desk'*

*'So when I take a shower I try to think about if just focus on taking the shower it might actually be more pleasant to me... I think when I do notice its when you are doing something by yourself... and once you start thinking you realise that for example if you're just walking down somewhere and you're having masses and masses of thoughts and you realise that you're not actually aware of what's happening around you'*

Two participants identified a change in their relationship to their thoughts.

*'Realising that we do not have to respond to our thoughts because they do not convert into something that will definitely occur... It weakens the thoughts. It's real when you first think about it. Realising it's not real makes it weaker'*

*'I imagined a thought in a bubble, a cloud, it can come and go'*

*'Since I've started the course I've really become aware of how my mind just races and sometimes I try to find the links between all the stuff ...'*

Participants reported feeling broadly positive about mindfulness;

*'It does have potential. It introduces you to an alternative way of thinking and dealing with thoughts'*

*'It was quite a nice kind of therapy I guess cos it was quite interactive and quite interesting'*

*'I definitely try to do things more mindfully. I think I'm more aware of when I'm not doing things mindfully and it makes me kind of not stressed out but just its quite sad that we go through life and we don't even think about the things that we do so I do attempt to just you know do things more mindfully sometimes'*

There was a consensus between participants that they would recommend the MBCT group intervention to other young people with similar difficulties

*'I think I'd tell them that it is very different from other therapies if they haven't been getting on with that very well ... its quite fun which is a weird thing to say about therapy but it was'.*

In summary, the comments made by participants in relationship to their understanding of mindfulness and the changes that they have noticed in their lives indicate that they were able to accept mindfulness as a potential tool in managing their own symptoms.

### *Difficulties experienced*

Two themes of difficulty emerged from these interviews. These were difficulties related to the formal practice and difficulties related to being mindful.

Each participant described difficulties in engaging in formal practice, but all gave a different explanation of the difficulty. Each of these is relevant to the development of this intervention for an adolescent group. One identified a negative thought that is common in depression and can often serve to reduce motivation to engage in treatment: *'Difficulties make you feel like nothing will help, mindfulness won't help'*.

Another participant described her busy schedule and commented that *'to listen to the tapes is like one of those things you never find time for'*. Finally, one participant explained that she had found it hard to engage with formal practice when it felt like homework but that she had been more willing to try it since the end of the group; *'...some weeks better than others. I have done some since then. I think I find it easier when its not kind of, well, compulsory, but kind of not when you know when its with a course...'*

Participants expressed trying to find times when they did try to use mindfulness. *'I do it mainly when I try to sleep. I try to think about breathing'*

*'I think you have to practice the skills more'*

However, there was an ambivalence about this reflected in the admissions that practicing had been hard alongside some acknowledgement that they could see some benefits. Indeed one of the participants explained that the course had made her want to practice more and requested information about additional materials that would help her to continue with her practice.

The second difficulty identified by participants was in developing mindfulness skills, though this might be viewed as difficulty in accepting the activity of their minds rather than seeking to control such activity. For example one participant expressed that

*'It's really difficult to control your mind...'*

Another described difficulties *'concentrating'* in the body scan exercise because

*'my mind wanders a bit'*

Both these comments suggest that these young people felt that being mindful was difficult, whilst also indicating that they were developing the skill of noticing the activity of their minds. The comments indicate that they, in common with many others developing a mindfulness practice, have not recognised the value of the active process of maintaining a mindful state, and instead are

seeking to achieve a meditative state. This goal directed seeking of a meditative state is not central to MBCT, but believing it to be so can lead people to seeing their wandering mind as an obstacle. The implications of this are further discussed in the discussion (section 4.1).

#### *Group contents*

Participants were asked to talk about elements of the course that they found beneficial and those that they had disliked.

One participant summarised MBCT as being *'quite a nice kind of therapy I guess cos it was quite interactive and quite interesting'*. She went on to describe other forms of therapy as having been *'tedious'* and explained that *'I kind of felt sometimes that it was a bit of a strain to get here [for other therapy sessions] and kind of a bit of a weight, but I don't really mind coming to this'*.

Each participant identified a different session as having had particular meaning for them. One found the 'thoughts are not real, just thoughts' session particularly useful and described a change in her meta-cognitive awareness. Another described mindful walking and mindful listening as having helped her to think about how she engaged in daily activities as being valuable. Finally, one participant explained that one session that had contained material about responses to difficult events, with photos of responses to bees, had been particularly memorable. She extended the metaphor and explained how she was trying to be more mindful about her homework, trying not to 'swat' it away but instead attempting to approach it one step at a time.

Participants were positive about the variety of materials and the structured activities;

*'It was all definitely very very helpful and if you have a little example like that then you realize there are many different ways that you can apply mindfulness to enjoying things a bit more...'*

No participant identified a session or activity which they had found unhelpful or thought should be replaced. However, one participant expressed some discomfort about being asked to give feedback about what she had taken from the session at the end. This discomfort is echoed in some feelings about being in a group therapy which will be explored further below.

#### *Being in a group*

Participants were on the whole positive about being in a group for therapy. However, there was some feedback from them which is particularly relevant for service development. This falls into two themes; nerves about being in any group and issues related to this particular group.

Two participants described nerves associated with being in any group. One participant explained that she would have felt more comfortable *'if we were all told we had similar symptoms*



*so that it would reassure us that we were all there for similar reasons at the initial stage*'. Another described her changing feelings about the group and the advice that she would give to other young people;

*'not to kind of dread the group think cos I think its actually better, at the beginning I was slightly dreading that there would be other people but you don't have to talk like specifically about your problems yet I think it still helps them...'*. Some of these nerves are linked to changes in comfort with group, which are to be expected, for example, one participant explained that *'At the beginning I was more nervous and found it awkward.'*

The second set of concerns that emerged has implications for service development as they are linked to group size. There was some variation in participant numbers as two young people left the group in the early sessions and there was some ambivalence amongst participants about whether they would prefer a larger group:

*'At first it was a nice number, sometimes people weren't there. With the small number it was focused on yourself a bit more, could talk more.'*

However, a stronger emerging theme was a desire for more discussion, which may have been facilitated by a larger group.

*'I think the only thing was that people was that people didn't really talk a lot. Which is kind of ok but is also a bit restraining I guess sometimes.'*

*'Well when we were all there I thought it was ok. But ... sometimes it was a little bit awkward because somebody would ask a question and you tend to think that you can't speak too much in groups like that so you would expect somebody else to say and there was just an awkward silence so I think if there were more people it would be better and maybe once somebody participates somebody else will actually come in and comment on that and stuff like that, where as often in the group it was just one of the counsellors asking and one of us answering and there wasn't much group discussion which is what I thought it would be like'.*

The implications for service development of concerns associated with group size will be further explored in the discussion.

### *Logistical concerns*

Finally participants were asked about more practical logistical barriers to engagement with the group. Of course, this is limited by the fact that the three participants interviewed were the three that had completed the intervention. However, two comments were made that have relevance for service development.

The first is particularly relevant to the National and Specialist clinic. This is that one participant found the journey to the group particularly long and tiring, and would have preferred to

have been able to access the therapy at a location closer to her home. The second was linked to the concern outlined above about the number of participants in the group. One participant commented on the value of having a set number of sessions that are not rescheduled around people's commitments.

*'I think if you start moving sessions it becomes more easy for people to say you know I have this thing I have to do and then we move another session ... maybe if you had more people in a group then it would be better because then if someone was missing then you could still hold the group and it wouldn't feel like there's loads of people missing and you're there by yourself'.*

### 3.3 Outcome measures

Four outcome measures were included in the evaluation of the MBCT intervention, the MFQ, PSWQ, CAMM and PQ-LES-Q. Clearly, analysis of these is limited by the small number of participants recruited into and completing the intervention as the study is underpowered to detect change, and as such data is presented on an individual basis.

#### 3.3.1 Depression: Moods and Feelings Questionnaire

Although all participants had completed at least one course of psychological therapy (CBT or IPT) and were clinically in remission at the point of recruitment, by the time the course commenced all had an MFQ score above 30 (see Figure 1). This means that the treatment was being delivered to participants with a rate of symptoms indicative of active depression, although they had been considered to be appropriate for inclusion by their care co-ordinators. These participants were retained in the group as they chose to be there, they had been clinically evaluated to not be in a major episode, and as there is growing evidence that mindfulness may be effective in the management of current symptoms (Williams & Kenny, 2009).

By the end of the intervention, two of the three participants' MFQ scores had declined. Scores for one of these continued to decline at follow-up, the other showed a slight increase but remained lower than the pre-intervention measurement. However, one participant, Participant 1, reported a slight increase in symptoms of depression during the intervention, and a more significant rise at follow-up.

#### 3.3.2 Worry: Penn State Worry Questionnaire

Figure 1 shows self-reported worry, as measured by the PSWQ. Each participant reported a decline in worry, which was sustained at follow up.

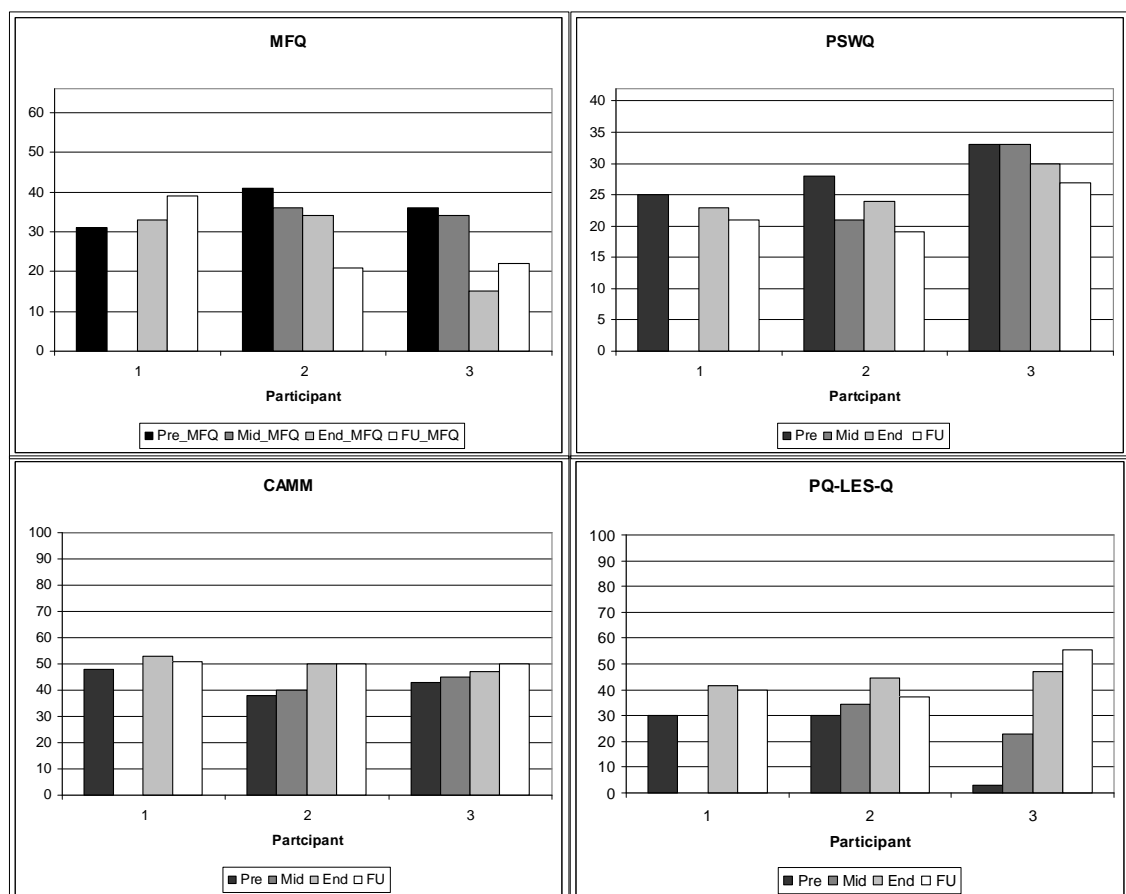
### 3.3.3 Mindfulness skills: Children's Acceptance and Mindfulness Measure

Figure 1 shows participants' self report of mindfulness skills, measured by the CAMM. All participants showed a slight increase in mindfulness skills. Notably, participant 2, who shows the greatest change, was the individual who reported being more able than the others to practice at home.

### 3.3.4 Quality of life: Paediatric Quality of Life Enjoyment and Satisfaction Questionnaire

Figure 1 shows participants' perceptions of their quality of life, measured by the PQ-LES-Q. All participants' perception of quality of life increased during the course of the intervention and although one participant showed a slight decrease between the end of the intervention and follow-up, all participants rated their quality of life at follow up as greater than at pre-treatment.

**Figure 1: Outcome measures: MFQ, PSWQ, CAMM, PQ-LES-Q**



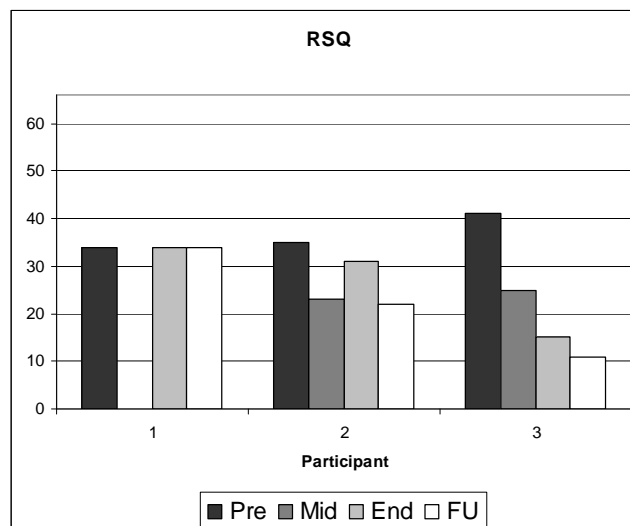
### 3.4 Putative process measures

Two measures of cognitive processes theorised to be influential in the maintenance of depression and anxiety were included in this evaluation. These were the RSQ which was used to measure rumination linked to depression and the CWPQ used to measure worry linked to anxiety, specifically Generalised Anxiety. The analysis of these measures as moderators of treatment outcome is prohibited by the extremely low power of this study. However, they are presented here as possible indicators of areas for future research on the ways in which MBCT influences the symptoms of depression and anxiety. Finally, a measure of environmental stress, the LEI, was used to record the level of negative life events occurring in each participants' life over the preceding 12 months.

#### 3.4.1 Rumination: Ruminative Response Scale

Figure 2 show participants' self report of rumination. Levels of rumination reported by one participant remained stable through out the intervention and post-intervention phase. This was Participant 1, who also reported an increase in depression symptoms on the MFQ. However, both remaining participants reported a decline in rumination, with one showing some fluctuation within an overall downward trend.

**Figure 2: Process measure: RSQ**

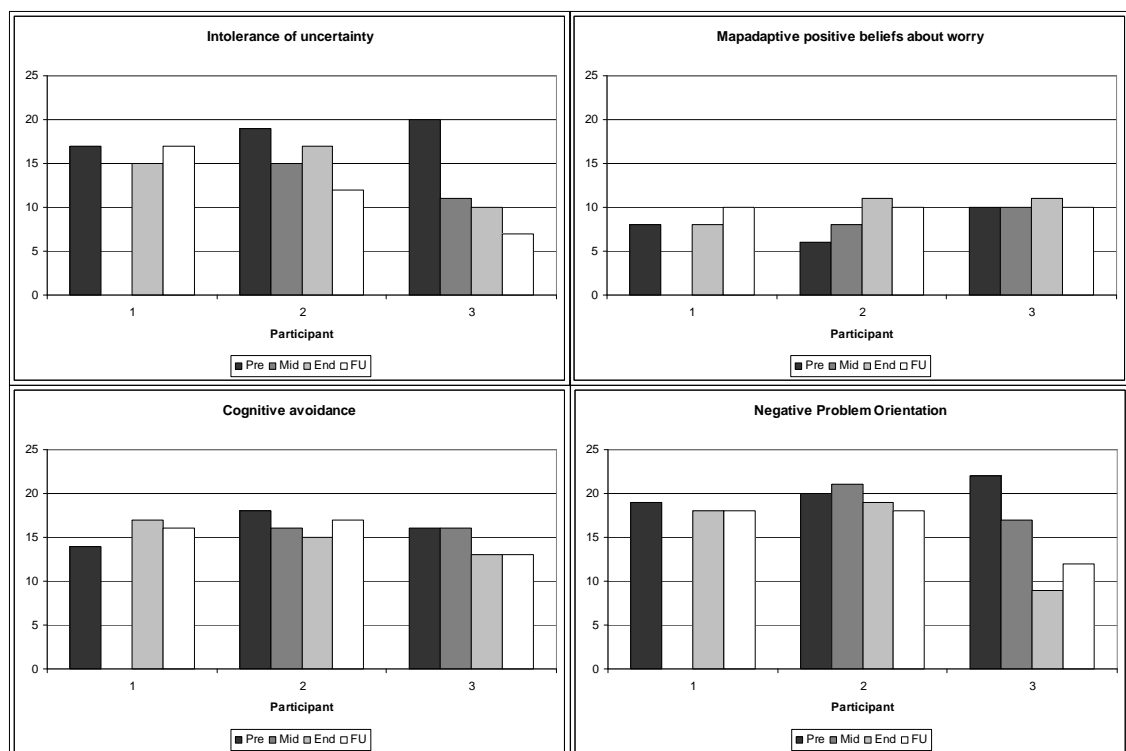


### 3.4.2 Worry: Composite Worry Process Questionnaire

The CWPQ is divided into 4 sections: intolerance of uncertainty, maladaptive positive beliefs about worry, cognitive avoidance and negative problem orientation. Participants' self report of each of these is shown in Figure 3.

Participant 1 reported little change in self report of these worry processes. This was the same participant who reported no change in rumination and an increase in depression during the intervention. Participants 2 and 3 reported notable reductions in levels of intolerance of uncertainty and negative problem orientation. Participant 2 reported broadly stable levels of cognitive avoidance while Participant 3 reported a slight decline in this process. All participants reported fairly stable levels of maladaptive positive beliefs about worry, although baseline levels were relatively low.

**Figure 3: Process Measure CWPQ**



### **3.5 Environmental stressors**

#### **3.5.1 Life Events Interview**

Two participants reported a low number of life events rated as quite or very unpleasant, however the third reported a higher number of these events (Participant 1 = 4; Participant 2 = 0; Participant 3 = 2). It is noteworthy that Participant 1 reported the greatest number of life events, largely involving family illness. These stressors in this young person's life may contribute, at least in part, to the decreased benefit she experienced from the MBCT course in comparison with the other two participants.

### **3.6 Summary of results**

The outcomes of this first MBCT group to be run for adolescents with depression within the National and Specialist Mood disorder Clinic provide encouraging if preliminary indications of the potential benefits of MBCT for young people and the feasibility of delivering therapy in this way.

First, it was seen to be acceptable to the majority of young people recruited who both enjoyed the intervention and would recommend it to others. However, they did report difficulties engaging with home practice and this difficulty may moderate the benefits of the intervention.

Second, two of the young people who completed the group reported reductions in depression and worry. Notably, they had been more symptomatic than indicated for this treatment (Nice, 2009) when the intervention began. The third young person could be classed as a non-responder; this may be at least partially attributable to the higher number of life events that she reported at the time of the intervention.

Third, the intervention was seen to be effective in increasing mindfulness as measured by self reported mindfulness skills. Putative reasons for the lack of a more substantial increase in mindfulness skills will be further discussed below.

Fourth, MBCT was seen to impact on cognitive processes theoretically connected to the development and maintenance of depression and anxiety; rumination and worry, in the two participants who showed a reduction in depression. Moreover, positive effects of MBCT were demonstrated in the increase of perceived quality of life and reports in the interviews of the small but significant effects of mindfulness in everyday life. This will be discussed in further detail below.

Finally, the qualitative and quantitative outcomes of this pilot study provide important information for the clinical service in developing future MBCT groups and further extending this service. This will also be discussed in detail below.

## 4. Discussion

### 4.1 Feasibility and acceptability of MBCT in a referred adolescent group vulnerable to depression

Both quantitative and qualitative measures of satisfaction indicate that MBCT was acceptable to this small group of adolescents. Participants who completed the intervention were both willing and able to attend, and all completers took part in the follow –up assessments. Participants were positive about the premise of MBCT, the material and format of the group sessions and the structure of the intervention. They valued the range of material and examples presented, indicating that the combination of techniques from the adult (Williams, Teasdale, Segal & Kabat-Zinn, 2007), child (Semple & Lee, 2008) and adolescent (Bögels, Hoogstad, van den Dun, Schutter and Restifo, 2008) protocols was appropriate.

However, the withdrawal of 40% of participants from the intervention is indicative of the importance of assessing fully for suitability before commencing this intervention. Of course, when working with a group vulnerable to relapse, it is reasonable to assume that a proportion of participants may relapse during the course of the intervention and require management within individual therapy. However, one young person found attendance at this group difficult because of her family situation, which raises the issue of parental involvement in supporting attendance and practice between groups and indicates that further work with parents may be beneficial. This will be further discussed in section 4.3.

Although in the feedback interviews each participant expressed positive views about MBCT and about practising mindfulness, they also indicated difficulties with engaging in home practice. Aspects of this relevant to service development will be discussed in section 4.3. However, a reticence to engage in home practice, perceived to be as like ‘homework’ or difficulty in finding time to do so, may have moderated the impact of the intervention. Indeed, the increase in mindfulness as measured by the CAMM was modest. The development of mindfulness relies on the encountering of one’s changing mind states, recognising them and disengaging from them. Although this development may be accelerated by engagement in regular practice to facilitate experiences of a ‘being mode’ (Segal, Williams & Teasdale, 2002, pp299-300), Segal et al., also highlight (p76) that this mode of being can be ‘*practiced in all situations*’. It is the use of mindfulness in tangible daily activities and situations that seems to have had the most resonance for these young people. This is not to negate the benefit of teaching skills through the formal practice, as participants referred to practice such as the 3 minute breathing space as being helpful,

and also expressed a desire to continue using the tapes after the course finished. However, it may indicate that greater emphasis might be put on practice in everyday life and activity when working with adolescent groups.

#### **4.2 Efficacy of MBCT in a referred adolescent group vulnerable to depression**

The extent to which we are able to comment on the efficacy of MBCT for this group is limited by the small number of participants, and smaller number of completers. However, we can tentatively conclude that two of the three completers responded to the intervention, as evidenced by declines in symptoms of depression. Measures of worry and rumination appear to have improved in line with the reduction in symptoms of depression. Moreover, all participants showed an increase in their perceptions of their quality of life, indicating that MBCT may have benefits beyond reducing symptoms. Changes in worry processes were less consistent and require further research before comment can be made on the impact of MBCT on them, however the two participants who did respond to the intervention showed positive changes in levels of intolerance of uncertainty and negative problem orientation. The participant that showed a worsening in depression symptoms did not show these improvements in rumination and worry, and also had greater number of negative life events. It is not possible to delineate the relationships between these cognitive and environmental effects in this research, though it is possible that life events moderated the impact of the intervention for this young person.

These conclusions are made with a significant caveat, which is that with this low number of participants, the absence of a control group and follow up only at 1 month, the data may reflect natural recovery rather than a meaningful response to treatment. Therefore, these findings, while encouraging, are seen to provide justification for future research rather than clear evidence that MBCT is efficacious with this group.

Future research should seek to further delineate the cognitive processes that are influenced by the development of mindfulness, and their impact on the course and symptoms of depression. Research should also aim to develop our ability to assess the suitability of young people for a course of MBCT, perhaps particularly further examining whether high levels of negative life events in the preceding period influence treatment outcome or can be accommodated.



### 4.3 Implications for Service Development

Perhaps the most significant implication for service development is the encouraging nature of these results. Although preliminary, both outcome and satisfaction measures provide support for the provision of further groups.

The work also raises a number of points for consideration by the service when running future groups. These include the content of the protocol, the management of home practice, the structure of the groups, levels of symptoms at pre-treatment and support for practice after the eight week course.

First, participants were enthusiastic about the contents of the protocol and the range of activities and opportunities to consider ways to practice mindfulness. However, it may be worth further considering the emphasis on everyday activity as well as formal practice in homework. The participants here found mindfulness in everyday life fitted more easily with their lives, and increasing the value placed on this by therapists may further facilitate the development of this skill. Participants also identified difficulties engaging with homework. It may be worth considering incentives for homework completion or increased use of technology to ease access to materials. Digital recordings of formal practice guidance were placed online for participants in this group but further exploration of technological options with a service user 'focus group' might be beneficial in future.

Second, the power of this study was adversely affected by the low number of completing participants. Moreover, the small size of the group was also an important theme identified in interviews with participants, all of whom felt that the group would have benefited from being slightly larger. The facility to run further MBCT groups with greater numbers of participants will be of benefit in improving service users' experience of a group environment, increasing the power for research studies and being economically more efficient as greater numbers of young people are treated concurrently. One way to overcome the difficulty of identifying sufficient numbers of young people ready for the intervention at the same time might be to use a 'rolling' group (P. Chadwick, personal communication). In addition, the findings of this study will be shared with other clinicians at a SLAM Mindfulness Special Interest Group. This may lead to the development of collaboration between the National and Specialist Service and local CAMHS services to enhance the provision of MBCT in local and N&S services.

Another issue linked to the size of groups is the difficulty experienced by some young people in speaking out in groups. It was highlighted in their feedback that they would have liked to have been more aware that they were experiencing similar symptoms. In fact, this had been discussed, but the feedback highlights the need for this to be made even clearer to adolescent

participants. Participants were also given the option to speak with facilitators on a 1:1 basis away from the group, but this facility was not well used by them. It may be the case that this option required greater emphasis placed on it, or that break away discussions, for example around difficult experiences arising in homework, be planned into the sessions.

Third, although participants were not considered to be actively depressed at pre-treatment, the level of symptoms indicated by the MFQ responses suggest that they were more symptomatic than is currently indicated for treatment using MBCT (Nice, 2009). Our finding that two of the participants benefitted from the intervention, whilst experiencing this higher level of residual symptoms, is in line with developing work with adults with active depression (Kenny & Williams, 2007).

Finally, participants shared a desire to continuing practice beyond the end of the group. It may be beneficial to consider ways in which the service would be able to support continued practice, perhaps through follow-up groups or regular practice sessions being offered to young people who have completed eight week courses. This has clear implications for resources, but may facilitate the continued benefits of reducing relapse, which in itself would be beneficial. One option which might allow for group completers to return for booster or follow up sessions, and which was discussed earlier would be to use rolling group membership. This may also allow for participants to continue developing their understanding and use of mindfulness practice. It was highlighted above that participants were concerned about the difficulty of mindfulness and perceived their ‘wandering minds’ as an obstacle to mindfulness, despite the fact that this reflects a development in their meta-cognitive awareness. Further experience, in larger groups with more discussion, may facilitate the development of an attitudinal stance that accepts the wandering mind with compassion rather than judgement. This is a central aim of MBCT, but it may be the case that in adolescence an 8 week course does not provide sufficient experience to develop this stance.

#### **4.4 Limitations**

Many of the limitations of this work have been alluded to above. The first and most significant is the extremely low number of young people recruited into and completing the intervention. As such result presented here, whilst encouraging, can only be seen as preliminary.

Second, non-completers were not followed up for either satisfaction ratings or for qualitative feedback. However, given their personal circumstances this was not considered appropriate. This limits our findings to those that did find the intervention acceptable and so does not allow us to comment on what changes may have held the others in the group.

Finally, the interviews were conducted by the clinical psychologist in training, who had been a co-therapist during the intervention. As such it may have been difficult for participants to provide negative feedback about the group or about mindfulness itself.

#### **4.5 Conclusions**

The work presented here demonstrates that MBCT is an acceptable intervention to adolescents who have received individual therapy for depression, but who continue to have residual symptoms. It has demonstrated that it is feasible to run an MBCT group in this setting and that young people were willing to travel to and participate in the group. It has provided preliminary but encouraging indication that MBCT is effective in managing residual symptoms of depression, in reducing rumination and increasing enjoyment of life. Further research is suggested to fully delineate the relationships between outcome and mediating factors, and to explore the balance of formal practice and everyday experiences in this client group.

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## 5. References

- Abela, JR.Z. Vanderbilt, E. & Rochon, A. (2004) A test of the integration of the response styles and social support theories of depression in third and seventh grade children. *Journal of Social and Clinical Psychology*, 23, 653-674.
- Abela, J.R.Z., Brozina, K. & Haigh, E.P. (2002) An examination of the response styles theory of depression in third- and seventh-grade children: A short-term longitudinal study. *Journal of Abnormal Child Psychology*, 30, 515-527.
- Angold, A., Costello, E. J., Messer, S. C., Pickles, A., Winder, F., & Silver, D. (1995) The development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research*, 5, 237 – 249
- Barnhofer, T., Crane, C., Hargus, E., Amarasinghe, M., Winder, R., & Williams, J. M. G. (2009). Mindfulness-based cognitive therapy as a treatment for chronic depression: A preliminary study. *Behaviour Research and Therapy*, 47(5), 366-373.
- Beck, A.T., Rush, A.J., Shaw, B.F. & Emery, G. (1979) *Cognitive therapy of depression*. The Guilford Press, New York.
- Biegel, G. M., Brown, K. W., Shapiro, S. L., & Schubert, C. A. (2009). Mindfulness-Based Stress Reduction for the Treatment of Adolescent Psychiatric Outpatients: A Randomized Clinical Trial. *Journal of Consulting and Clinical Psychology*, 77, 855-866
- Birmaher, B., Arbelaez, C. & Brent, D (2002) Course and outcome of child and adolescent major depressive disorder. *Child and Adolescent Psychiatric Clinics of North America*, 11, 619+
- Bootzin, R. R., & Stevens, S. J. (2005). Adolescents, substance abuse, and the treatment of insomnia and daytime sleepiness. *Clinical Psychology Review*, 25(5), 629-644.

- Bögels, S., Hoogstad, B., van Dun, L., de Schutter, S., & Restifo, K. (2008). Mindfulness Training for Adolescents with Externalizing Disorders and their Parents. *Behavioural and Cognitive Psychotherapy*, 36(2), 193-209.
- Buhr K. & Dugas M.J. (2002). The intolerance of uncertainty scale: Psychometric properties of the english version. *Behaviour Research and Therapy*, 40, 931-945
- Burke, C.A. (2009) Mindfulness-Based Approaches with Children and Adolescents: A Preliminary Review of Current Research in an Emergent Field. *Journal of Family and Child Studies*. DOI: 10.1007/s10826-009-9282-x
- Burleson Daviss, W., Birmaher, B., Melhem, N. A., Axelson, D. A., Michaels, S. M., & Brent, D. A. (2006). Criterion validity of the Mood and Feelings Questionnaire for depressive episodes in clinic and non-clinic subjects. *Journal of Child Psychology and Psychiatry*, 47, 927-934.
- Costello, E.J., Pine, D.S., Hammen, C. et al. (2002) Development and natural history of mood disorders. *Biological Psychiatry*, 52, 529-542
- Daviss, W.B., Birmaher, B., Melhem, N.A., Axelson, D.A., Michaels, S.M. & Brent, D.A. Criterion validity of the Mood and Feelings Questionnaire for depressive episodes in clinic and non-clinic subjects. *Journal of Child Psychology and Psychiatry*, 47, 927-934.
- Dugas M.J. & Robichaud M. (2007) *Cognitive-behavioural treatment for Generalized Anxiety Disorder: From science to practice*. Routledge
- Endicott J, Nee J, Yang R, Wohlberg C. (2006) Paediatric Quality of Life Enjoyment and Satisfaction Questionnaire (PQ-LES-Q): reliability and validity. *Journal of the American Academy of Child and Adolescent Psychiatry* 45, 401-407
- Fombonne, E., Wostear, G., Cooper, V., et al. (2001a) The Maudsley long-term follow-up of child and adolescent depression: 1. Psychiatric outcomes in adulthood. *British Journal of Psychiatry*, 179, 210-217.

- Fombonne, E., Wostear, G., Cooper, V., *et al.* (2001b) The Maudsley long-term follow-up of child and adolescent depression: 2. Suicidality, criminality and social dysfunction in adulthood. *British Journal of Psychiatry*, 179, 218–223.
- Goodman, R. (2001) Psychometric properties of the strengths and difficulties questionnaire, *Journal of the American Academy of Child and Adolescent Psychiatry*. 40, 1337-1345
- Greco, L. A., Dew, S. E., & Ball, S. (2005). Acceptance, mindfulness, and related processes in childhood: Measurement issues, clinical relevance, and future directions. In S.E. Dew & R. Baer (Chairs), *Measuring Acceptance, Mindfulness, and Related Processes: Empirical Findings and Clinical Applications across Child, Adolescent, and Adult Samples*. Symposium presented at the Association for Behavior and Cognitive Therapies, Washington, DC.
- Greco, L. A. & Hayes S. C. (2008), *Acceptance and mindfulness interventions for children, adolescents, and families*. Oakland, CA: Context Press/New Harbinger Publications.
- Kabat-Zinn, J. (1982) An outpatient program in behavioural medicine for chronic pain patients based on the practice on mindfulness meditation – Theoretical considerations and preliminary results. *General Hospital Psychiatry*, 4, 33-47
- Kabat-Zinn, J. (1990) *Full catastrophe living: The program of the Stress Reduction Clinic at the University Massachusetts Medical Centre*. New York: Dell Publishing.
- Kabat-Zinn, J., Lipworth, L. & Burney, R. (1985) The clinical use of mindfulness mediation for the self-regulation of chronic pain. *Journal of Behavioural Medicine*, 8 (2), 163-190.
- Kabat-Zinn, J., Massion, A. O., Kristeller, J., Peterson, L. G., Fletcher, K. E., Pbert, L., *et al.* (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *American Journal of Psychiatry*, 149, 936-943.
- Kendler, K.S., Thornton, L.M., & Gardner, C.O. (2000) Stressful life events and previous episodes in the etiology of major depression in women: an evaluation of the ‘kindling’ hypothesis. *American Journal of Psychiatry*, 157, 1243–1251.

- Kendler, K.S., Thornton, L.M., & Gardner, C.O. (2001) Genetic risk, number of previous depressive episodes, and stressful life events in predicting onset of major depression. *American Journal of Psychiatry*, 158, 582–586.
- Kenny, M. A., & Williams, J. M. G. (2007). Treatment-resistant depressed patients show a good response to Mindfulness-based Cognitive Therapy. *Behaviour Research and Therapy*, 45, 617-625.
- Kingston, T., Dooley, B., Bates, A., Lawlor, E., & Malone, K. (2007). Mindfulness-based cognitive therapy for residual depressive symptoms. *Psychology and Psychotherapy-Theory Research and Practice*, 80, 193-203.
- Klein, J.B., Jacobs, R.H. & Reinecke, M.A. (2007) Cognitive-behavioural therapy for adolescent depression: a meta-analytic investigation of changes in effect-size estimates. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46, 1403-1413.
- Kuyken, W., Byford, S., Taylor, R. S., Watkins, E., Holden, E., White, K., et al. (2008b). Mindfulness-Based Cognitive Therapy to Prevent Relapse in Recurrent Depression. *Journal of Consulting and Clinical Psychology*, 76, 966-978.
- Kuyken, W., Watkins, E., Holden, E. & Cook, W. (2006) Rumination in adolescents at risk for depression. *Journal of Affective Disorders*, 96, 39-47.
- Laugesen, N., Dugas, M.J. & Bukowski, W.M. (2003) Understanding adolescent worry: The application of a cognitive model Source. *Journal of Abnormal Child Psychology*, 31, 55 – 64
- London School of Economics (2006) *The Depression Report: A New Deal for Depression and Anxiety Disorders*. The Centre for Economic Performance's Mental Health Policy Group
- Ma, S. H., & Teasdale, J. D. (2004). Mindfulness-based cognitive therapy for depression: Replication and exploration of differential relapse prevention effects. *Journal of Consulting and Clinical Psychology*, 72, 31-40.

- Meiser-Stedman, R., Dalgleish, T., Smith, P., Yule, W., & Glucksman, E. (2007). Diagnostic, demographic, memory quality, and cognitive variables associated With acute stress disorder in children and adolescents. *Journal of Abnormal Psychology, 116*, 65-79.
- Meyer TJ, Miller ML, Metzger RL, Borkovec TD. (1990) Development and validation of the Penn State Worry Questionnaire. *Behavioural Research and Therapy, 28*, 487-95
- National Institute for Health and Clinical Excellence (2005) Depression in Children and Young People. NICE. <http://www.nice.org.uk/nicemedia/pdf/CG028NICEguideline.pdf>
- National Institute for Health and Clinical Excellence (2009) Depression. NICE. <http://www.nice.org.uk/nicemedia/pdf/CG90NICEguideline.pdf>
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.
- Nolen-Hoeksema, S., Wisco, B.E. & Lyubomirsky, S. (2008) Rethinking rumination. *Perspectives on Psychological Science, 3*, 400-424.
- Paykel, E. S., Ramana, R., Cooper, Z., Hayhurst, H., Kerr, J., & Barocka, A. (1995). Residual symptoms after partial remission – an important outcome in depression. *Psychological Medicine, 25*(6), 1171-1180.
- Post, R.M. (1992) Transduction of psychosocial stress into the neurobiology of recurrent affective disorder. *American Journal of Psychiatry, 149*, 999–1010.
- Robichaud M. & Dugas M.J. (2005) Negative problem orientation (part I): Psychometric properties of a new measure. *Behaviour Research and Therapy, 43*, 391-401.
- Rohde, P., Silva, S.G., Tonev, S.T., Kennard, BD., Vitiello, B., Kratochvil, CJ et al.. (2008) Achievement and maintenance of sustained response during the treatment for adolescents with depression study continuation and maintenance therapy *Archives of General Psychiatry, 65*, 447-455



- Roelofs, J., Rood, L., Meesters, C., te Dorsthorst, V., Bögels, S., Alloy, L.B. & Nolen-Hoeksema, S. (2009) The influence of rumination and distraction on depressed and anxious mood: a prospective examination of the response styles theory in children and adolescents. *European Journal of Child and Adolescent Psychiatry*, 18, 635-42
- Segal, Z. V., Williams, J. M. G., Teasdale, J. D., & Gemar, M. (1996). A cognitive science perspective on kindling and episode sensitization in recurrent affective disorder. *Psychological Medicine*, 26, 371–380.
- Segal, Z. V., Williams, J. M. G., Teasdale, (2002) *Mindfulness-Based Cognitive Therapy for Depression: A New Approach to Preventing Relapse* J. D. New York: Guilford Press
- Semple, R. J., & Lee, J. (2008). Treating anxiety with mindfulness: Mindfulness-based cognitive therapy for children. In L. A. Greco & S. C. Hayes (Eds.), *Acceptance and mindfulness interventions for children, adolescents, and families* (pp. 94- 134). Oakland, CA: Context Press/New Harbinger Publications.
- Semple, R.J., Lee, J., & Miller, L.F. (2006). Mindfulness-based cognitive therapy for children. In R.A. Baer (Ed.), *Mindfulness-based treatment approaches: Clinicians guide to evidence base and applications* (pp. 143-166). Oxford, UK: Elsevier.
- Semple, R. J., Lee, J., Rosa, D., & Miller, L. F. (2009). A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. *Journal of Child and Family Studies*, doi:10.1007/s10826-10009-19301-y.
- Semple, R. J., Reid, E. F., & Miller, L. (2005). Treating anxiety with mindfulness: An open trial of mindfulness training for anxious children. *Journal of Cognitive Psychotherapy*, 19, 379-392.

- Shaffer, D., Gould, M.S., Brasic, J., Ambrosini, P., Fisher, P., Bird, H., et al., (1983). A children's global assessment scale (CGAS). *Archives of General Psychiatry*, 40, 1228-31
- Sokolov, S. & Kutcher, S. (2001) Adolescent depression: Neuroendocrine aspects. In *The Depressed Child and Adolescent* (ed. I. M. Goodyer), pp. 233–266. Cambridge Child and Adolescent Psychiatry series. Cambridge: Cambridge University Press.
- Teasdale, J. D. (1988). Cognitive vulnerability to persistent depression. *Cognition and Emotion*, 2, 247–274.
- Teasdale, J. D., Segal, Z., & Williams, J. M. G. (1995). How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behaviour Research and Therapy*, 33, 25–39.
- Teasdale, J. D., Segal, Z. V., Williams, J. M. G., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, 68, 615-623.
- Thompson, M., & Gauntlett-Gilbert, J. (2008). Mindfulness with children and adolescents: effective clinical application. *Clinical Child Psychology and Psychiatry*, 13, 395-407.
- Weisz, J.R., McCarty, C.A. & Valeri, S.M. (2006) Effects of psychotherapy for depression in children and adolescents: A meta-analysis. *Psychological Bulletin*, 132, 132-149.
- Williams, J., Teasdale, J., Segal, Z. & Kabat-Zinn, J. (2007) *The Mindful Way Through Depression, Freeing yourself from chronic unhappiness*. Guildford Press, New York.
- Wilkinson, P., Dubicka, B., Kelvin, R., Roberts, C. & Goodyer, I. (2009) Treated depression in adolescents: predictors of outcome at 28 weeks. *British Journal of Psychiatry*, 194, 334-41

- Wood, A., Kroll, L., Moore, A., & Harrington, R. (1995) Properties of the Mood and Feelings Questionnaire in adolescent psychiatric outpatients: A research note. *Journal of Child Psychology and Psychiatry*. 3, 327-334.
- Wood, A., Harrington, R. & Moore A (1996) Controlled trial of a brief cognitive-behavioural intervention in adolescent patients with depressive disorders. *Journal of Child Psychology and Psychiatry*, 37, 737-746
- Zylowska, L., Ackerman, D. L., Yang, M. H., Futrell, J. L., Horton, N. L., Hale, T. S., et al. (2008). Mindfulness meditation training in adults and adolescents with ADHD: a feasibility study. *Journal of Attention Disorders*, 11, 737-746.

## Appendix 1: Participant feedback and Semi-structured interview schedule

	1 Not at all	2 A little bit	3 A medium amount	4 Quite a lot	5 Very
Did you <b>enjoy</b> the activities on the mindfulness course?					
Did you <b>enjoy</b> being in a group on the mindfulness course?					
Did you feel <b>able</b> to practice the skills at <b>home</b> ?					
Did you feel the trainers <b>understood</b> your needs/difficulties?					
Are you finding the <b>skills</b> you have learnt <b>useful</b> ?					
How easy was it for you to <b>attend</b> the groups?					
Would you <b>recommend</b> this group to another person of your age with similar difficulties?					

Questions for interviewer to ask. Interviewer to follow up responses with further probes as appropriate.

1. What have you gained from the programme? We would be interested to hear about changes in any area of your life, big or small and general or specific.
2. Was there anything that you found particularly useful during the course?
3. Is there anything we could have changed (time/location/duration/frequency) that would have made it easier for you to participate in the group?
4. Is there anything about the way the group was organised that would have made it more beneficial for you?
5. Was there anything that you found unhelpful about the course?
6. Would you recommend this course to someone else in similar circumstances?

# MAIN RESEARCH PROJECT

## Psychotic-like Experiences in children: an examination of associated psychological factors

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Supervised by Elizabeth Kuipers and Suzanne Jolley

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## **Abstract**

Psychotic-Like Experiences (PLEs) in childhood are common, and the majority are likely to be transitory and benign. However, for a proportion of children these experiences are distressing and lead to behavioural and emotional difficulties that come to clinical attention. Little is known about the presentation or needs of these young people.

The research presented in this thesis provides a cross-sectional description of referred young people aged 8-14. Children referred to a community Child and Adolescent Mental Health Service were assessed for a range of emotional, cognitive, social and neuropsychological factors, hypothesised to be involved in the development and maintenance of PLEs.

An experience of at least one PLE in the two weeks preceding assessment was reported by 72.4% of participants. These were found to be significantly associated with emotional, cognitive and social variables. More specifically, depression and probabilistic reasoning were found to predict the frequency and severity of these experiences.

Analysis comparing groups of children with and without PLEs with concurrent distress confirmed the roles of these emotional, cognitive and social variables, and indicated further roles for neuropsychological processes.

The results of this research are interpreted as being supportive of the relevance of multifactorial psychological models in conceptualising of PLEs in childhood. However, it is suggested that there is a need for incorporation of neuropsychological factors and for consideration of the developmental interactions between factors.

This research highlights factors which may be important in clinical intervention and the importance of assessment for PLEs. These experiences were seen to be very common in this group, and not likely to be a good indicator of specific future risk when considered alone. Given the interaction of cognitive and emotional processes in the presentation of this common, and sometimes distressing experience, the importance of a normalising approach to assessment and intervention is discussed.

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## 1. Introduction

Cognitive models of psychosis emphasise a normalising approach. Psychosis is viewed as arising from the interaction of multiple cognitive, social and emotional vulnerability factors, which are present in the normal population to varying degrees and are not in themselves pathognomonic. Crucial to the development of psychosis is the process of appraisal: unusual experiences, life events and emotional changes must be interpreted as external, personal and, usually, threatening in order to become ‘symptoms’. Normalising appraisals, it is argued, may avert the onset of acute psychosis, even when risk factors combine to create an at-risk mental state. However, by the time an at-risk mental state develops, significant impairment to social and occupational functioning may already have occurred, and may not be recovered. Intervening before this occurs would be desirable, but raises the difficulty of identifying those who may be vulnerable, and who may become at risk in the future. A better understanding of the trajectories associated with vulnerability factors is central to developing earlier, preventative interventions, for psychosis. One hypothesised vulnerability factor is psychotic-like experiences (PLEs).

A great deal of recent research has focused on PLEs in childhood, framing them variously as a vulnerability factor, a risk factor, or even some kind of biomarker, for psychosis. While some research teams argue that any PLE is a risk factor for the later development of psychosis or other mental health problems, other studies have found very high numbers of young people reporting PLEs, and have suggested that it is only when PLEs are persistent and distressing, or when they are appraised negatively, that risk is increased. There is disagreement, therefore, about the prevalence of childhood PLEs, and their significance, both in terms of future risk, and current, associated distress.

The research reported here is a cross-sectional comparison of referred young people with and without PLEs. The following selective literature review will outline models of the relationships between these experiences and psychosis, and comment on their limited utility, both for improving scientific understanding of PLEs and for developing clinical interventions to help young people with distressing PLEs. The potential to improve both understanding and intervention by considering childhood PLEs within the context of cognitive models of the development of psychosis will be considered. This will be followed by a full review of the limited psychological research to date that has involved children and adolescents reporting PLEs. This review will indicate the importance of developing a fuller understanding of the needs of young people presenting to mental health services who are reporting these experiences.

### 1.1 Psychotic Like Experiences/Unusual Experiences

Psychotic-like experiences (PLEs) are similar in form and content to psychotic experiences such as delusions or hallucinations, but are reduced in frequency or intensity by comparison. PLEs include beliefs that may appear odd to others, and altered perceptions such as

hearing, seeing or feeling things which are not apparent to others. Kelleher, Harley, Murtagh & Cannon (2011) found that the most frequently reported of these experiences in child general population samples are auditory and visual hallucination-like experiences and paranoid ideation. PLEs have been associated with clinical risk including distress and self harm in adolescents and mental health difficulties in later life for some young people (Addington et al., 2011, Nishida et al., 2010, Poulton et al., 2000, Welham, Isohanni, Jones & McGrath, 2009).

The term PLE will be used throughout this thesis as it is the most frequently used term in the field. Others have used Out of the Ordinary Experiences (Colbert & Peters, 2002), or Psychosis Like Symptoms in Children (PLIKS, Horwood et al., 2008). The term used by our group with young people and their families has been Unusual Experiences. The differing usage of these terms highlights two important issues. The first is the assumption that these experiences are associated with psychosis, which, as will be explored below, is not clearly the case in adults or younger people (see Section 1.3.1.1). This assumption may have important influences on scientific and clinical practice, and it is important to explore the way in which it might limit our understanding of these experiences. The second is that we currently do not have a full understanding of the nature of these experiences in childhood, or of the extent to which they are comparable in content, aetiology, form or impact to similar experiences in adolescence or adulthood. The link to psychosis may be less relevant in childhood than in later life, and the use of the term 'PLE' may come to be seen as inappropriate as an umbrella term for all childhood experiences of this kind, and, perhaps, more relevant to a subsection of young people's experiences.

This field of research is still in its early stages, but longitudinal studies that have described an increase in the risk of developing psychotic disorder in individuals who report PLES when in childhood or adolescence have led to important discussions about the putative developmental trajectories linking experiences, symptoms, at risk mental states, prodromal states and psychosis. Early intervention in the mental health of young people has been recognised as a Department of Health priority (2007). It has been suggested that the new Diagnostic and Statistical Manual of Mental Disorder (DSM-V) might include a classification of 'Attenuated Psychosis Syndrome' (<http://www.dsm5.org/ProposedRevisions/>; see Section 4.4). The research presented here is timely, and pertinent to this suggestion, as it seeks to describe some of the clinical, cognitive and social factors that distinguish young people reporting PLEs from other referred young people.

## **1.2 Prevalence of Psychotic Like Experiences**

Psychotic Like Experiences are understood to be common in the general adult population, with varying prevalence estimates (32-75% Peters, Joseph & Garety, 1999; 18.6% Freeman et al 2011). Van Os, Linscott, Myin-Germeys, Delespaul & Karbbendam (2008) have

reported findings from a meta-analysis that the median prevalence of ‘sub clinical psychotic experiences’ is around 5% and the median incidence is around 3%.

The published rates in child and adolescent samples also vary (see Table 1.1). Some variation is likely to be accounted for by measurement differences. For example, the lower rates reported by Scott et al. (2009) are likely to reflect measurement instrument choices as they only asked two hallucination related questions, and were therefore not able to detect the broad range of experiences that have been reported elsewhere. Some studies have used self-report questionnaires for classroom based data collection which may result in young people misunderstanding or misinterpreting questions so that a high number of false positives are recorded. Indeed, Van Os et al. (2008) note the widely recognised increase in prevalence rates based on self-report than those following clinician assessment. These methodological issues notwithstanding, it is clear that these experiences are fairly common in young people. Moreover, the frequency of PLEs reported by children and young people in several countries, suggests that they may be a normative part of development. Despite this, prevalence estimates based on parental report are far lower than those based on self report (Laurens et al., 2007; Kelleher et al., 2011). It is not clear at this stage whether children either do not tell their parents about these experiences or whether parents have different appraisals of the experiences or a different understanding of the questionnaires.

Despite the variation in both adult and child estimates, there appears to be a tendency for PLEs to be more commonly reported in childhood and adolescence. Indeed, Laurens et al. (2011) have reported that children over the age of 10 years 5 months were significantly less likely to report a PLE as being certainly true than the younger children in their sample. This lends support to the suggestion that these experiences are more common earlier in life. The reduced prevalence in older participants may reflect a normative reduction in these experiences with age, or a change in attribution of their meaning or significance. It is not possible to make clear comparisons as different studies have included differing types of experience in their measures. However, it is possible that in child samples phenomena such as magical thinking are experienced more than might be expected in an adult sample, and that these are captured by some measures but not others.

	Assessment	Country	n	Age range	Criteria	Prevalence
Laurens et al. (2007)	DISC adapted, plus 4 additional questions	UK	548 264	9-12	Self report 'certain' Boys/girls Parent report 'certain' Boys/girls	63.4%/53.5%  15.2%/12.9%
Laurens, Hodgins, Taylor & Murray (2011a)	DISC adapted, plus 4 additional questions	UK	1,347	9-12	Self report 'certainly true' Parent report 'certainly true' Triad of antecedents	63% 10% 9.5%
Laurens, Hobbs, Sunderland, Green & Mould 2011b	DISC adapted, plus 4 additional questions	UK	7966	9-11	At least one 'certainly true'	66%
Yoshizumi et al (2004)	Questionnaire : visual and auditory hallucinations	Japan	761	11-12		21.3%
Kelleher et al. (2011)	7 item screen validated by K-SADS	Ireland	231	11-13	One or more PLEs definite or maybe definite Two or more PLEs definite or maybe Three or more PLEs definite or maybe	73.7% 38.3%  50% 33%
Nishida et al., (2008)	DISC-C	Japanese	4894	12-15	definite or possible definite	36.9% 15.2%
Barragan et al (2011)	CAPE	Spain	777	13-17	Any Endorsement Positive PLE /Negative PLE Nearly Always Positive PLE /Negative PLE	100%/98.3%  39%/21%

	Assessment	Country	n	Age range	Criteria	Prevalence
Yung et al (2009)	CAPE	Australia	875	13-17	Reports at least one PLE: at least sometimes always/nearly always	91% 9.1%
Scott et al (2009)	hallucinations	Australia	1261	13-17		8.4%
Kinoshita et al. (2011)	DISC-C	Japan	18,104	12-18	Reports at least one PLE: 'yes definitely'	14.4%
Wigman et al 2011	CAPE	Europe and North America	5422	12-16	Reports at least one PLE: at least sometimes often or almost always	95% 43%
		Holland	1816	15-17	at least sometimes often or almost always	94% 39%
Dhossche, Ferdinand, van der Ende, Hofstra & Verhulst, 2002	YSR CIDI	Holland	914 796	11-18 19-26		6% 3%
Armando et al, (2010)	CAPE	Australia/Italy	1777	15-26	at least sometimes (nearly/always) Persecutory Ideation Grandiosity Perceptual Abnormalities Bizarre Experiences	92.3% (5.0%) 74.8% (8.7%) 25.0% (1.2%) 39.8% (2.4%)

**Figure 1.1 PLE prevalence reports from community and population based studies**

CAPE: Community Assessment of Psychic Experiences (Stefanis et al., 2002)

K-SADS: Schedule for Affective Disorders and Schizophrenia for School-Aged Children, Present and Life Time (Kaufman, Birmaher, Brent, Rao & Ryan, 1996)

DISC-C: Schizophrenia section of the Diagnostic Interview Schedule for Children (Costello et al., 1985)

YSR: Youth Self Report (Achenbach, 1991)

CIDI: Composite International Diagnostic Interview (WHO, 1992)



### 1.3 Models of psychosis and Unusual Experiences

There are two main ways in which PLEs have been theoretically understood; in a quasi-dimensional model and a fully dimensional model. Each is based on the premise that PLEs fall on a continuum from sub-clinical (normal) experiences and symptoms to clinically relevant symptoms of psychosis. The critical difference is whether PLEs, in and of themselves, are viewed as pathological or indicators of vulnerability. Each of these will be outlined below.

#### 1.3.1 Quasi dimensional models of unusual experiences and psychosis

In recent quasi dimensional models PLEs are conceptualised as an indicator of a particularly high risk of the later development of psychosis (Chapman, Edell & Chapman, 1980; Chapman & Chapman, 1987; Poulton et al., 2000; van Os et al., 2008). Van Os et al's (2008) proneness-persistence-impairment model of psychotic disorder views PLES, or 'sub-clinical psychosis', as indicative of an underlying vulnerability to psychosis that can be triggered by environmental events or distress.

Van Os et al. (2008) describe an aetiological continuity between psychosis and PLEs. Cannabis, alcohol and other psychoactive drugs, stressful or traumatic events and urbanicity were identified as increasing the likelihood of experiencing sub-clinical psychosis in a meta analysis of studies with both adult and child participants. Van Os et al. also report cognitive parallels between clinical and sub-clinical psychosis, for example in mentalising and probabilistic reasoning biases, whilst also highlighting that to date very little work has been conducted on the neurocognitive profiles of people reporting PLES.

Van Os et al. (2008) hypothesise that proneness to psychosis can lead to persistence of symptoms in conditions of environmental stress interacting with genetic risk. This can develop further to psychotic disorder, associated with impairment. This is described as a rare, poor outcome, from a common and transitory expression of psychosis proneness. Indeed, although Van Os et al. argue that the most important aspect of the validity of subclinical psychosis is the transition to full scale psychosis over time, they also highlight the transitory nature of these experiences for most people (Dominguez, Wicher, Lieb, Wittchen & van Os, 2011). Indeed, Hanssen, Bak, Bijl, Vollebergh & van Os (2005) report only an 8% transition rate from psychotic like experiences to clinical psychotic disorder over a two year follow up in a large sample of working age adults. This study also demonstrated the multifactorial nature of transition, with a transition rate of 21% for those with multiple psychotic experiences and of 15% for those whose experiences had coincided with low mood.

Even in the most high risk groups; identified by genetic risk, cognitive abnormalities, functional decline, and attenuated positive and negative symptoms, only 9.8%-40% are reported to develop psychosis over published follow up periods (Yung et al., 1998, 2006, 2008; Morrison et al., 2002).

Verdoux et al. (1998) have suggested that this psychosis proneness is at its peak in adolescence, and there has been a recent increase in interest in risk markers in childhood and adolescence. For example, Kelleher et al. (2011) have described children who report PLEs as being a unique high risk group for studying the trajectory to schizophrenia and related illnesses. However, it is not clear that these experiences, or ‘symptoms’ alone can accurately be considered to be indicative of an ‘at risk’ group. They calculate that their screen has a sensitivity of 70% (95% CI 45.7-88.1) and a specificity of 82.6% (95% CI of 68.6-92.2). The conclusion that is drawn from this that between 33% and 73.7% (see Table 1.1) of a general adolescent population could form a high risk group would put a large proportion of the adolescent population in a high risk category, which it could be argued has limited value.

This large proportion of adolescents reporting PLEs is consistent with a larger general population study of younger school aged children (Laurens et al., 2007, 2011a, b; see Table 1.1). However, given the lack of specificity of PLEs in childhood in the prediction of mental health difficulties (e.g. Nishida et al., 2009; Scott et al., 2009; Yung et al 2009) Laurens et al. use a triad of antecedents to identify a higher risk group. These antecedents are derived following the neurodevelopmental hypothesis of psychosis (see Section 1.4.1) and comprise: 1) caregiver reported delays in speech and/or motor development, 2) child reported internalising problems and/or caregiver reported externalising problems and/or peer relationship problems in the clinical range, 3) child-reported psychotic like experiences. 9.5% of participants reported the triad of putative antecedents. From an epidemiological stand point this group may form a more informative group to follow through longitudinal studies which may inform our understanding of the development of psychosis. Indeed, research into PLEs in adult populations has demonstrated that it is the associated distress, rather than the experience per se, that distinguishes a clinical from a non-clinical population (Bell et al., 2008; Peters et al., 1999).

#### *1.3.1.1 Limitations of quasi-dimensional models of unusual experiences and psychosis*

Van Os et al.’s (2008) proneness-persistence-impairment model of psychosis is based in some important literature regarding the factors that elevate the risk of both psychosis and PLES. It is also clear that the increase in risk for developing a psychotic disorder following PLES earlier in life is of scientific importance. However, the model does not consider the influence of developmental factors on the expression and outcome of PLES (see Section 1.5), and is predominantly based on research with adults. As such, it may lead to conclusions pertaining to risk and trajectory being applied inappropriately to children.

The implications for clinical practice, particularly within a child and adolescent service, of labelling ‘false positives’ as having any form of psychotic disorder must also be considered, and therefore the limitations of quasi-dimensional models require attention.

Poulton et al. (2000) report an absolute risk of 25% of children who reported psychotic experiences at 11 being diagnosed with schizophreniform disorder at the age of 26. However,

the outcomes are more varied than suggested by the headline result (age 11 strong symptoms  $n = 13$ , age 26 schizophreniform disorder  $n = 3$ , anxiety  $n = 4$ ; age 11 weak symptoms  $n = 95$ , age 26 schizophreniform disorder  $n = 9$ , anxiety  $n = 32$ , depression  $n = 19$ ). The increase in risk for both anxiety disorders and schizophreniform disorder are significantly different in the symptomatic groups than in the control groups. Furthermore, Poulton et al. report that 90 % of the strong symptom group at age 11 had some form of social or occupational impairment at age 26. This study is often cited as evidence for an increased risk for psychosis following PLEs in childhood. A stronger though less specific conclusion that the data points towards is an increase in risk for some form of mental health difficulty, either anxiety or psychosis, and an increased risk of social or occupational impairment. Indeed, it would be premature to draw strong conclusions about the path between PLEs and psychosis on the basis of 3 individuals being diagnosed with schizophreniform disorder.

Laurens et al.'s (2007) triad of putative antecedents arguably has more predictive power than PLEs alone, and may identify a group of young people at higher risk of later mental health problems, including psychosis. However, the majority of young people presenting with the full triad in Laurens et al.'s research would not be predicted to be diagnosed with a psychotic disorder in later life according to expected prevalence rates.

Indeed, Simon & Umbricht (2010) have highlighted the high remission rate from an at risk mental state, and the risks associated with increased anxiety and stigma related to labelling individuals prematurely. This is particularly relevant for children and adolescents who report PLEs. Ziermans, Schothorst, Sprong & van Engeland (2011) have reported that in a group of adolescents considered to be at high risk for psychosis because of a combination of positive symptoms and cognitive impairments, after 2 years only 15.6% of young people had developed psychosis and 35.3% were still considered to be at risk while 49.1% had remitted. These groups could not be distinguished by baseline measures (see also Addington et al., 2011).

For most children PLES will be transitory (Escher et al., 2002; van Os et al., 2009) and so while for some a need for care will be apparent it is important that young people are not incorrectly labelled as being at risk for a disorder which continues to be stigmatised by the general population. Indeed, the van Os group highlight (Hannsen et al., 2005) the need to consider these experiences as a phenotype of interest, not simply as a risk factor for the later development of psychosis. The stigma and fear attached to concerns about the development of possible mental health difficulties in later life may have a more immediate effect on young people's development and achievement (Breslau, Lane, Sampson & Kessler, 2008; Elkington et al., 2012; Fletcher, 2008). Furthermore, given the hypothesised importance of appraisal of experience in the development of 'illness' (Garety et al., 2001, 2007), the suggestion that a young person may be at risk of developing psychosis, based only on their unusual experiences, may be counter-productive, in that a negative and threatening appraisal of PLEs is being

promoted, which may, paradoxically, increase the risk of the experiences becoming problematic.

### 1.3.2 Dimensional models of unusual experiences and psychosis

Dimensional forms of the continuous models of psychosis conceptualise PLEs as being on a continuum from no such experiences to psychotic disorder, with interaction with other genetic, neuropsychological and environmental factors in cases of schizophrenia or psychosis. These models (e.g. Claridge, 1994) differ from the quasi-dimensional models as they do not view PLES as manifestations of psychosis that are not yet fully expressed, but instead view them as a variant of personality that even under stress does not necessarily lead to psychotic disorder.

Linked to these models is a body of work on schizotypy and links to creativity (e.g. Schuldberg, 2000) which will not be reviewed here. However, relevant to this work with young people is the concept that PLEs are not considered by all to be markers of psychopathology.

## 1.4 Psychological models

No model has yet been published which targets specifically the emergence, presentation, maintenance and outcome of PLEs in childhood. At this time psychological models of symptoms of psychosis are the most relevant to turn to for direction in structuring early investigations.

### 1.4.1 Neurodevelopmental model

Neurodevelopmental models of psychosis (for a review see Rapport, Addington, Frangou & MRC Psych, 2005) have been influential in guiding psychosis research. Broadly, these models describe a combination of genetic and environmental factors resulting in abnormalities in brain development which lead to the onset of psychotic symptoms. These abnormalities in brain development result in a suppression of general cognitive ability, indexed by measures of IQ, and more specific neuropsychological deficits, from early childhood, in individuals who later develop psychosis.

#### *1.4.1.1 Neuropsychological functioning in high risk and birth cohort groups*

A reduction in IQ has been a consistent finding in psychosis research at various levels of symptomatology and functioning. Indeed, in a population based study Polanczyk et al. (2010) report reduced IQ as early as five years of age as a risk factor for later schizophrenia. Similarly, Reichenberg et al. (2010) have reported two developmental atypicalities, between the ages of 7 and 13 years in individuals who later developed schizophrenia. These are firstly, an early and static developmental deficit in verbal and visual knowledge acquisition, reasoning and conceptualisation, and, secondly, a developmental lag in attention, processing speed and working memory.

Impairments in memory and attention have been consistently reported in high risk studies. The siblings (mean age 11.65, S.D. 3.12) of people with a diagnosis of schizophrenia have been reported to be impaired relative to control participants on measures of working memory, verbal memory and learning, working memory and IQ (de la Serna et al, 2010) and to have an elevated risk of attention impairments if their sibling had attentional difficulties (Egan et al., 2001). Longitudinal studies of high risk groups have reported similar factors to be predictive of later mental health status. Verbal short term memory in combination with an attention span task (Erlenmeyer-Kimling & Cornblatt, 1992) predicted 83% of adults later developing psychoses in the New York High Risk Study (Erlenmeyer-Kimling et al., 2000). Similarly, Seidman et al. (2010) have reported that a composite measure of neuropsychological function distinguished between prodrome, genetically at risk and control participants (mean age 18.2, S.D. 4.9). In this study a verbal working memory reduction was predictive of faster development of psychosis. In another at risk cohort Plueger, Gschwandtner, Stieglitz & Reicher-Rössler (2007) identified working memory as a potential trait marker for psychosis, over and above other measures of memory and attention. In the Edinburgh High Risk Study deficits in global IQ, speed of language processing, executive function, perceptual motor speed, mental control, verbal ability and memory have been reported (for a review see Cunningham Owens & Johnstone, 2006), with most marked performance deficits on the Hayling Sentence Completion Task, Rivermead Behavioural Memory Test and Rey Auditory Verbal Learning Test (RAVLT). However, in the context of this array of cognitive impairments, only performance on the RAVLT, which measures verbal memory, was predictive of subsequent conversion to schizophrenia.

#### *1.4.1.2 Neuropsychological functioning in people with psychotic illness*

Multiple impairments of neuropsychological functioning have been described in cohorts of people with psychotic illness. The ones more relevant to this thesis are those associated with high risk groups and particularly young people, and the focus of this review is on those. There is a large body of research examining the neuropsychological functioning of adults with a diagnosis of a psychotic disorder in which there are some important parallels with the findings of high risk and birth cohort studies. Consistent impairments have been reported in IQ (e.g. Béchar-Evans, Iyer, Lepage, Joobar & Malla, 2010), processing speed (prodrome, Niendam et al., 2006; Eastvold, Heaton & Cadenhead, 2007; first episode, Leeson, et al., 2010), attention impairments (psychosis, Finkelstein, Cannon, Gur, Gur & Moberg, 1997), verbal memory (ultra high risk, Brewer et al., 2005; prodromal, Lencz et al., 2006; Niendam et al., 2006; Eastvold et al., 2007; adolescent onset; Bachman et al., 2012; psychosis, Cameron et al., 2002; Leeson et al., 2009; children with schizophrenia-spectrum Yeo et al., 1997). Moreover, working memory has been associated with persistence of delusional ideation in an at risk sample (Broome et al. 2007).

Despite considerable interest in social cognitive processes and psychosis (e.g. Frith, Friston, Liddle & Frackowiak, 1992) there have been mixed findings with some describing theory of mind deficits only in active illness phases (Frith, 1992) while others have reported deficits in remission (for meta analyses see Sprong et al., 2007; Bora, Yucel & Pantelis, 2009) and in adult non-affected relatives of people with schizophrenia (Janssen et al., 2003). Similarly inconsistent findings have been reported in studies of emotion processing in adult and high risk groups (e.g. Eack et al., 2009, Addington, Penn, Woods, Addington & Perkins, 2008, but see Bolte & Poutska, 2003) yet emotion recognition deficits have been proposed as a potential trait marker for psychosis (e.g. Eack et al., 2009).

There have been other important areas of investigation in neuropsychological research in psychosis. These include the potential involvement of executive functions, although findings in this field have been mixed. Both executive function and psychosis are multifaceted and heterogeneous constructs, which will not be reviewed here. Another important area of research, which will not be reviewed here has been that of source monitoring and memory (Johnson, 1997) which have been the focus of a number of theoretical accounts of auditory hallucinations and positive symptoms (Asaad & Shapiro, 1986; Beck & Rector, 2003; Bentall 1990; Cahill, Silbersweig & Frith, 1996; Frith, 1992; Hoffman et al., 1986; Waters, Badcock, Mitchie & Maybery, 2006).

One recent study has explored the impact of neuropsychological changes associated with adolescent onset psychosis, particularly in terms of how these changes influence the developmental trajectory of neuropsychological functions. In this study Bachman et al., (2012) highlight processing speed as being particularly susceptible to aberrations from the standard developmental trajectory; if impaired in adolescence, becoming increasingly impaired with age. In contrast, impairments of verbal memory and sensorimotor dexterity were more static.

#### *1.4.1.3 Limitations of the neurodevelopmental model*

Despite the considerable amount of scientific evidence that people at all stages of the psychosis trajectory experience neuropsychological impairment or dysfunction these processes alone have not yet been able to explain why some people at high risk of psychosis make the transition to psychosis while many do not; that is none of the risk factors reported to date are either necessary or specific to psychosis (for a review see Niemi, Suvisaari, Tuulio-Henriksson & Lönngqvist, 2003). Even in the genetic high risk samples, processes such as working memory may explain an increase in relative risk, but they do not currently act as clinical as opposed to population based screening tools (e.g. Johnston, Ebmeier, Miller, Owens & Lawrie, 2005). At most, they appear to be putative endophenotypic markers, which act in combination with further factors to result in the emergence of psychosis.

Furthermore, the neurodevelopmental model does not explain the interaction between neuropsychological and cognitive or emotional processes. A fine grained analysis would be

needed to draw out the complex relationships between these components (Guillem, Rinaldi, Pampoulva & Stip, 2008). For example, it is increasingly well established that anxiety plays a role in the emergence of psychosis (Garety, Kuipers, Fowler, Freeman & Bebbington, 2001; 2007; Freeman & Garety 2003). It has been suggested that some of the attention impairments observed in participants with schizophrenia may be the consequence of a reduction in processing capacity which may result from attention to psychotic symptoms (Nuechterlein & Dawson, 1984). It may be that the interaction of subtle neurodevelopmental deficits and anxiety, at least to some extent, account for reports of memory impairment in people with schizophrenia or psychosis (Eysenck, Derakshan, Santos & Calvo, 2007; Gray, Braver & Raichle, 2002). Similarly, the presence of negative symptoms or cognitive rumination may negatively impact on executive functioning (e.g. Halari et al., 2009).

An additional limitation is that neurodevelopmental models do not account fully for the influence that trauma, migration, urbanisation, victimisation and other environmental factors are increasingly believed to play in the development of psychosis (e.g. Kroll, 2007; Van os, Kenis & Rutten, 2010).

Finally, and most importantly for the research presented here, the neurodevelopmental model is predicated on identifying risk for later psychosis. However, young people who present with PLEs in childhood may be at developmental risk for a range of disorders, or they may have a transitory experience. The potential risks of focusing primarily on genetic or neurodevelopmental factors are that important cognitive or emotional areas of intervention may be missed and this may lead either to a failure to reduce distress and impairment at the time of presentation, or possibly to a more persistent experience with potential functional and developmental consequences. Moreover, it is not clear from the neurodevelopmental model why so many young people report PLEs when asked, but so few of these experience the distress and impairment that leads to clinical referral.

#### 1.4.2 Multifactorial models of psychotic experience

In recent years a general consensus has developed that the emergence of psychosis follows a biopsychosocial vulnerability that is in some way triggered by stressful or traumatic life events, adverse environments, isolation or the use of drugs. The triggering of this vulnerability results in emotional changes, which include anxiety, depression, anger and mania. There are concurrent cognitive aberrations in perception, attention or judgement, and negative appraisals made of the experience. Together these lead to positive symptoms of delusions and hallucinations. Psychological models (e.g. Garety, Kuipers, Fowler, Freeman & Bebbington, 2001; 2007) have included these emotional and cognitive factors, and these psychological models have been incorporated with dopaminergic theories (Kapur, 2003) into neuropsychiatric models (e.g. Broome et al., 2005; van der Gaag, 2006).

The cognitive model developed by Garety et al (2001; 2007) describes the links between positive symptoms and vulnerability, stress, emotional changes and unusual experiences with appraisals of experiences, reasoning biases and beliefs about the self, others and the world. This model will be described in more detail as it has particularly guided the research presented here and incorporates elements from previously described models (e.g. Frith 1992; Helmsley, 1993, Bentall et al., 1994; Chadwick & Birchwood, 1994, Morrison, Haddock & Tarrier, 1995).

#### *1.4.2.1 Predisposing vulnerability factors*

In common with early stress-vulnerability models of psychosis (e.g. Zubin & Spring, 1977) Garety et al., incorporate the well accepted biopsychosocial vulnerability to psychosis as the starting point for their model. In the context of this vulnerability, stress leads to cognitive and emotional changes (see Sections 1.4.2.2. and 1.4.2.3.).

Stressors that have been reported to increase the risk of psychosis developing include urban, inner city living (Mortensen et al., 1999) and traumas such as childhood abuse, physical attack, serious accidents or threats to self (e.g. Bebbington et al., 2004; Janssen et al., 2004). For example, in adults the prevalence of both psychosis (Fearon et al., 2006) and PLEs (Morgan et al, 2009) in Britain is reported to be higher in Black Caribbean populations than in either White British or Black African populations. This has been linked to experience of social disadvantage, alienation and a sense of persecution, vulnerability or otherness.

These stressors are hypothesised to act developmentally, influencing schema development (see Section 1.4.2.3) and also as proximal triggers that lead to emotional changes which influence interpretations of anomalous experiences. Freeman and Fowler (2009) have suggested that traumas have a direct relationship with hallucinations through flashbacks or intrusive trauma memories and an indirect relationship with delusions mediated by affective change. Both these paths are consistent with the Garety et al. model which posits one pathway directly from stressful events and anomalous experiences to psychotic symptoms and a second which is mediated via emotional changes alone.

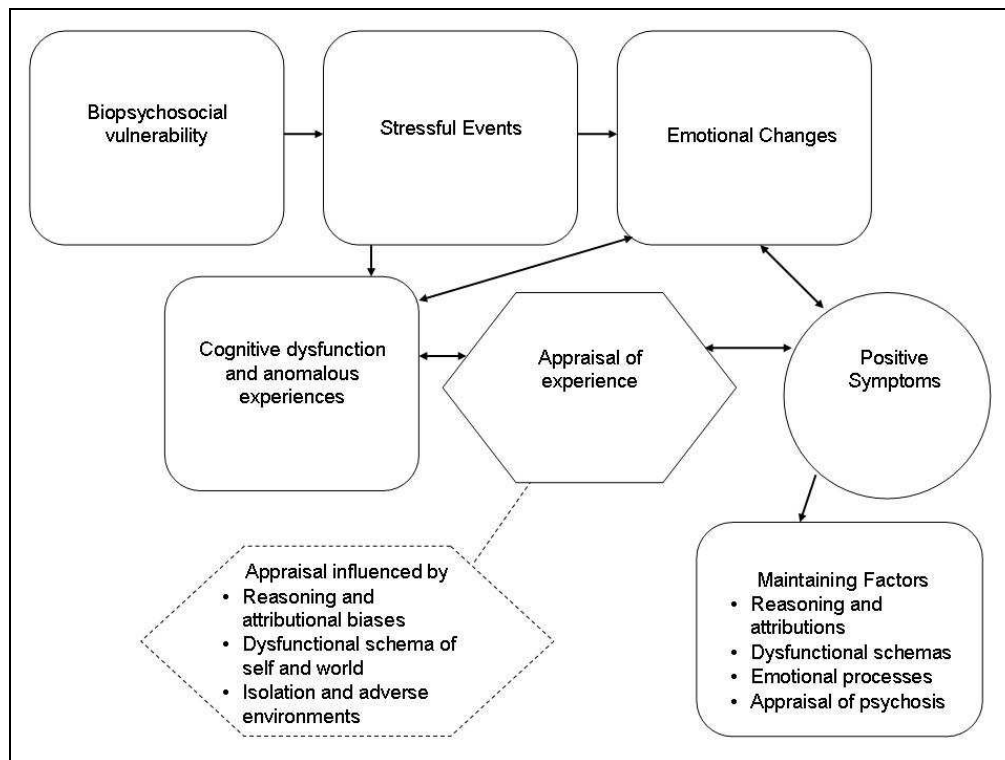
#### *1.4.2.2 Emotional factors*

Although traditionally schizophrenia and affective psychoses have been classified separately, it has become clear that emotional processes contribute to the emergence and maintenance of psychosis. Depression and anxiety, and associated cognitive processes have been explored by different research groups, and it is likely that both play a role in the aetiology and maintenance of psychotic symptoms.

Birchwood (2003) has described emotional dysfunction, particularly depression, as being an intrinsic part of psychosis, not a co-morbid feature. He describes three, potentially overlapping pathways to explain emotional disorder in psychosis. These are: intrinsic processes



such as depression in the prodromal phase, responses to psychosis and processes resulting from developmental pathways altered by trauma or neglect. More recently, the relationship between depression, paranoia and cognitive processes (including social cognition and cognitive biases) has been seen to be present across diagnostic categories (Bentall et al., 2009) of psychosis and depression.



**Figure 1.2 Schematic representation of Garety et al.'s cognitive model of the positive symptoms of psychosis (2007, 2001)**

Freeman and Garety (Freeman, Garety & Phillips, 2000; Freeman & Garety, 2003) have focused on the role that anxiety plays, both through engendering a search for meaning following anxiogenic experiences and also through associated processes such as safety seeking behaviours which prevent disconfirmation of feared beliefs and information processing biases which will increase attention to threat relevant, confirmatory material (c.f. Eysenck, Deraksham, Santos & Calvo, 2007).

It has been argued that cognitive and emotional factors may distinguish between the transitory or non-impairing experience of hallucinations and the emergence of psychosis (Krabbendam et al., 2004). Indeed, emotion has an important bi-directional relationship with cognitive processes, and cognitive processes associated with depression and anxiety might be particularly important in the emergence and experience of positive symptoms. For example, rumination has been linked to the development of hallucinations, through its relationship with intrusive thoughts (Jones & Fernyhough, 2009).

*1.4.2.3. Cognitive factors*

Reasoning, cognitive biases and schemas are incorporated into the Garety et al. model through the influence that they have on the appraisal and interpretation of anomalous experiences.

One cognitive bias which is particularly highlighted by Garety et al. in the development and maintenance of positive symptoms is the Jumping to Conclusions probabilistic reasoning bias (JTC). This bias was described by Garety and colleagues (Huq, Garety & Hemsley, 1988; Garety, Hemsley & Wesley, 1991) as one mechanism which might be implicated in the emergence of delusions via an ‘incorrect inference about external reality’ (APA, 1995). The JTC bias has been most widely investigated using the original task adapted by Garety and colleagues from Philips & Edwards, 1966, in which the participant decides from which of two jars of beads the individual beads are being displayed to them are being drawn. These two jars contain a mix of two different colours in either a 85:15 or 60:40 ratio. The JTC bias is classified as making a decision about which jar beads are being displayed from after presentation of two or fewer beads. It has been suggested that the bias is a reflection of a bias towards collecting less information rather than a more general reasoning bias (Bentall & Young, 1996; Dudley et al., 1997). The task has been developed to reduce memory load so that working memory deficits reported in psychosis do not confound an apparent bias. It has also been demonstrated that the bias is not dependent on impulsivity, as reaction times do not differ between groups (Moritz & Woodward, 2005).

The JTC bias is seen in approximately one half to two-thirds of individuals with delusions (for a review see Freeman, 2007). This has been replicated by different research groups using slightly differing protocols (e.g. Moritz & Woodward, 2005; van Dael et al., 2006). It is stable between phases of active symptoms and remission, in contrast to other factors such as depressive schemas (Peters & Garety, 2006). Furthermore, it has been reported in studies of individuals in prodromal states (Broome et al., 2004), relatives of those with psychosis (van Dael et al., 2006) and those in the non-clinical general population with higher levels of conviction in paranoid ideas or who have reported PLEs (Freeman, Pugh & Garety, 2008; McKay, Langdon & Coltheart, 2006). In both population and clinic based studies the JTC bias is associated with the strength of conviction with which a delusion is believed rather than presence of a delusional idea (Freeman et al., 2008; Garety et al., 2005). Together these findings suggest that a JTC bias is a state factor that may make individuals more vulnerable to strengthening conviction in their belief by repeatedly misinterpreting evidence such that it develops into a more fixed delusion.

Fowler et al. (2006) have demonstrated that the schema of people with psychosis are characterised by negative appraisals of self and others. These negative schema are associated with grandiosity and paranoia in non-clinical and clinical populations (Smith et al., 2006) and influence the presentation of ‘poor me’ and ‘bad me’ paranoia (Trower and Chadwick (2006).

In the Garety et al. model schemas are hypothesised to influence the interpretation of experiences and the maintenance of positive symptoms. Anomalous experiences are more likely to be appraised as threatening, and this threatening appraisal believed to be true if consistent with schema of vulnerability of self or the threat of others.

#### *1.4.3.4. Strengths and limitations of the cognitive model*

Although the cognitive model of the development of positive symptoms of psychosis is the most appropriate to the research conducted here with young people who report PLEs it is not without limitations.

One strength of the Garety et al. model is that it is a symptom model rather than a single disease model so it does not presume a specific outcome but instead seeks to explore what may lead to presentation of a particular symptom. However, as this model was developed to account for these symptoms with adults with psychosis, it may not be as able to account for children reporting PLEs; it does not, for example, take account of the neurodevelopmental factors that may be particularly pertinent in childhood.

A further strength of this model is that it allows for differing pathways to positive symptoms. However, the model is limited for use with young people because it does not allow for exploration of the different pathways to differing outcomes following the experience, which may be more important for children.

### **1.5 Developmental factors related to unusual experiences**

Although research into PLEs has highlighted continuity between factors implicated in psychosis and PLEs, which has been taken here to suggest the applicability of adult models for psychosis in understanding PLEs, it should be noted that little of this research has been conducted with young people. Moreover, there is a paucity of research that compares clinical samples of referred young people with and without PLEs. This research is necessary in order to distinguish the factors that may be common to all presentations of psychological distress in young people, from the factors that may be more specifically related to PLEs with concurrent distress.

The experience of PLEs in childhood is associated with an increased risk of mental health difficulties later in life, though not specifically psychosis. PLEs have been associated with experience of mood disorders, anxiety disorders, behavioural disorders, self harm and suicidality (Nishida et al., 2009; Scott et al., 2009; Yung et al 2009). High levels of psychotic symptoms have been reported in children with depression (Freeman, Poznanski, Grossman, Buchsbaum & Banegas, 1985) and reports of hallucinations by the age of 14 have been associated with the later development of depression and substance abuse (Dhossche et al, 2002). A model of these experiences in childhood would therefore need to be able to account for different outcomes.

We also do not have a scientific understanding of the relationship between PLEs and developmental stage, or indeed whether there is such a relationship. Up to 72% (Laurens et al 2011) and 95% (Wigman et al., 2011) of children and adolescents report an experience of a PLE, indicating that for some young people these may be a normative part of development, that may be discrete or benign. However, in contrast to the well established understanding of the normative emergence of fears and anxieties during development, there is no clear understanding of whether PLEs follow a similarly normative trajectory. For example, it may be that ideas of reference or paranoia are closely tied to developing social cognition and that anomalous experiences may be linked to neurological development. Appraisals of these experiences and the relationship between schema led interpretations of them (see section 1.4.2.3.) may be dependent on factors such as the development of meta-cognition, levels of social comparison and social cognition and the establishment of schemas through development. An anomalous experience at age 9 or 10 may not be appraised as threatening or to have negative personal implications (for example of either vulnerability or of mental health consequences) or be linked to schematic beliefs in the same way as it might at 16. This extends Bentall et al.'s (2007) call for a cognitive developmental account of psychosis, to include PLEs as a normative experience alongside a need to extend our understanding of psychological factors involved developmentally in psychosis itself.

Similarly, there is strong evidence of neuropsychological involvement in psychotic symptoms (see section 1.4.1). However, we do not currently have a model of these experiences that takes into account the developmental trajectories of these functions and considers how immature neuropsychological and meta-cognitive function may relate to the high rates of reported PLES in young people.

### **1.6 Summary of the relevance of models of psychosis to the study of PLEs**

Overall, the Garety et al. model is viewed at present as the best model to use to guide research into PLEs reported in childhood, as it deals with the development of psychosis, and hypothesises that vulnerability to psychosis is multidimensional with a range of outcome trajectories, most of which will not lead to illness, depending on the specific pattern of vulnerabilities, triggers and protective factors. However, in addition there are elements of the neurodevelopmental model and literature which may be particularly pertinent in childhood and which have also been incorporated into the research described in this thesis. This review has also highlighted the importance of developmental considerations and of a multifactorial approach to the study of PLEs in childhood, which is informed by cognitive and neurodevelopmental models, but which also draws on current approaches in developmental psychology such as the modelling of developmental trajectories.

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## 1.7 Review of PLE research to date

In contrast, to the considerable body of research that has reported on risk factors for the later development of psychosis, in longitudinal genetic high risk and population studies, research into the psychological processes that are involved in emergence and maintenance of PLEs is in its infancy. Studies to date have not identified the factors that distinguish those reporting PLEs from those who do not, but rather tend to focus on the factors that distinguish those who later develop psychosis from those that do not. Moreover, few studies have reported on research with young people prior to adolescence except to report on early risk factors for later psychopathology. As a result of these research foci, little is known about the distinct presentation or needs of referred young people reporting PLEs in mid to late childhood.

### 1.7.1 Emotional

The association of psychosis and PLEs with depression and anxiety in the adult population has been mirrored in high risk and prospective longitudinal studies. For example, elevated anxiety and depression scores have been reported in childhood in those who later developed psychosis (Owens & Johnstone, 2006; Kim-Cohen et al., 2003). Moreover, in children experiencing hallucinations, affective disruption is a better predictor of long term outcome than more direct measures of psychotic symptoms (Escher et al., 2002; see also Owens & Johnstone, 2006). There have been similar findings of emotional difficulties in adolescents reporting PLEs. In a birth cohort study Polanczyk et al. (2010) report that young people with psychotic symptoms reported a higher level of depression and anxiety than control participants, and also describe an intermediate group, possibly akin to a PLE group who had intermediate scores between the children with psychotic symptoms and control children. In Laurens et al. (2007) community screening project 17.4% of 80 children aged 9-15 were reported to experience both PLEs and either emotional or behavioural difficulties.

Armando et al., (2010) report associations between PLEs and distress and depression in a study which spans adolescence and early adulthood. This extends earlier work by Yung et al. (2006) in finding that not all PLEs have the same strength of relationship with distress. Armando et al. report that bizarre experiences and persecutory ideas were associated with distress, depression and poor functioning while perceptual abnormalities were associated only with distress. Grandiosity was associated with both poor functioning and distress. Similarly, Barragan, Laurens, Navarro & Obiols (2011) report associations between depression and both negative and positive PLEs. Symptoms of depression were found to be positively associated with persecutory ideation and hallucinatory experiences while there was a negative association between depression and grandiose thinking. Barragan et al. also report a positive association between depression and negative PLEs of social withdrawal and avolition, although these authors' use of PLEs to describe behavioural features rather than experience extends the previous definition of PLEs. It is unclear at this stage whether this relationship is best explained

by the impact of PLEs on mood, an association between mood and the development of PLEs or a reflection of features associated with another clinical presentation such as depression. Moreover, the emotional distress of young people with PLEs, in comparison to other clinic samples has not been described.

PLEs in adolescents have also been associated with increased levels of self harm and suicidal feelings (Nishida et al., 2009; Polanczyk et al., 2010) and interpersonal violence and violence towards objects (Kinoshita et al., 2011). These relationships remain after controlling for other relevant factors including symptoms of mood disorders and substance abuse.

### 1.7.2 Social and environmental

Little is known about the specific effect of social and environmental factors on the emergence of PLEs in childhood, particularly in comparison to other clinical groups where similarly elevated levels of trauma or social disadvantage would be expected.

Studies of high risk groups have described social adjustment and peer interaction difficulties (e.g. de la Serna et al, 2010, Owens & Johnstone et al., 2006). Moreover, research with community samples (Arseneault, Bowes & Shakoor, 2010; Kelleher et al., 2008) indicate that these difficulties could be expected to be amplified in young people with PLEs compared to other referred young people. Indeed, in community samples, bullying has been associated with the later development of PLEs (e.g. Lataster et al., 2006; Campbell & Morrison, 2007; Schreier et al., 2009) as well as other mental health difficulties in adolescence and later (e.g. PTSD, Rivers et al 2004; depression and suicidality, Mills et al., 2004). Schreier et al., (2009) demonstrated this association in a prospective design, when IQ, family adversity and other prior psychiatric symptoms were controlled for. This study also reports that PLEs are associated with chronic and severe victimisation and that they do not interact with a family history of schizophrenia or other risk factors (see also Mackie, Castellanos-Ryan & Conrod, 2011). These findings, particularly the strong pathway from severe trauma such as torture or long term abuse, suggest a pathway independent of specific genetic risk of psychosis (Bebbington et al., 2011).

The path from victimisation to PLEs may be mediated by a stress response, particularly as stress that is socio-evaluative or uncontrollable in nature can evoke particularly strong neurochemical responses involving cortisol and modulating dopaminergic systems, which have been linked to psychosis (Jones & Fernyhough, 2007). According to psychological models, which do not dispute the neurochemical evidence, this pathway from victimisation to PLEs may also be mediated by the development of cognitive schemas of vulnerability of self or the threat of others (Garety et al. 2001; and see section 1.4.2.3). These schemas may then serve to bias information processing at times of stress or when anomalous events are experienced, such that PLES occur. Indeed, in research with adults it has been suggested that while levels of reported trauma may not vary between clinical and non-clinical groups, negative appraisals made of PLEs are associated with need for care (Lovatt, Mason, Brett & Peters, 2010). This

variation in appraisal may be explained by a difference in schema development following traumatic events.

A further environmental risk factor that has attracted a considerable amount of attention, both in the psychosis literature and in the wider public awareness is substance use. Mackie, Castellanos-Ryan & Conrod (2011) report three different PLE trajectories; persistent, increasing and low. They found that those on the increasing trajectory were more likely to have started smoking cigarettes before the onset of PLEs and to be using cocaine, cannabis or other drugs at later assessment points. It is not clear whether these adolescents have a common susceptibility to PLEs and substance use or whether there is an interaction between the trajectory PLEs take and the use of substances (see also Saha et al., 2011). The results presented by Mackie et al., did not support the suggestion that cocaine or cannabis use predicts these early trajectories, however there was an association between earlier use of nicotine and the development of an increasing trajectory of PLEs. These findings suggest that early intervention with children reporting PLEs may be important in reducing their susceptibility to later substance use, which may exacerbate or amplify their anomalous experiences.

### 1.7.3 Cognitive

Garety et al. (2001) have highlighted the importance of cognitive processes in their model of the positive symptoms of psychosis, but there have been few studies examining these in childhood. The Garety et al. model also indicates a role for cognitive processes associated with emotions. One of these, rumination, has been associated with poor outcomes in adults with hallucinations (Jones & Fernyhough, 2009) and in young people with depression (Roelofs et al, 2009; Kuyken et al, 2006; Abela, Vanderbilt, & Rochon, 2004; Abela, Brozina, & Haigh, 2002).

Consistent with this is a study by Lin et al. (2011). In a sample of adolescents from the general population, assessed three times over three years they found that the persistence of PLEs was associated with emotion focused coping and that a decrease in PLEs was associated with task focused coping (Endler and Parker 1990). These findings are consistent with reports from the adult clinical population in which poorer outcomes in those with psychosis are associated with non-adaptive coping styles (e.g. Ritsner et al., 2003; Boschi et al., 2000). It has been suggested by Lin et al. that an increase in emotion focused coping with increases in the number of PLEs reported may reflect a sense of loss of control over these experiences (cf. Birchwood & Chadwick, 1997, Garety & Freeman, 1999) and an association between PLEs and depression (Yung et al., 2006) which elicits emotion focused coping.

Similarly, Escher et al. (2002) compared referred and non-referred voice hearing 8-19 year olds and report that those who help seek present with more emotional triggers to voices, a more negative emotional response to voices and a passive coping style. Negative emotional responses and passive coping styles may increase risk of distress and impairment leading to

referral. However, rumination itself has not yet been investigated in young people with PLEs.

Campbell and Morrison (2007) have investigated relationships between bullying, PLEs and appraisals in a group of 373 community based 14-16 year olds. They report that their index of a 'predisposition to psychotic phenomena' was associated both with the perception of being bullied and with post trauma cognitions about the self and the world. Bullying has also been associated with risk for other mental health difficulties including depression and low self esteem (Mills et al., 2004). Campbell and Morrison hypothesise that the experience of PLEs or being prone to PLEs may increase the likelihood of a child interpreting peer interactions as hostile and rejecting, however the direction of causality between these experiences and interpretations remains to be explored. Indeed, a further cognitive component in the Garety et al. model, schematic beliefs about self and others, may be important in this appraisal of peer interaction. Schematic beliefs have not yet been assessed in children reporting PLEs. However, a longitudinal relationship between attributional styles and PLEs has reported that an externalised Locus of Control at age 8 increases the risk of psychotic symptoms at age 13 (Thompson et al., 2011).

Metacognitive processes have been of interest to researchers looking across the psychosis continuum (e.g. Morrison & Wells, 2003; Reeder, Rexhepi-Johansson & Wykes, 2010) with similar metacognitive processes thought to occur in healthy individuals who score highly on measures of schizotypy and in people in an at risk state (Barkus et al., 2010). It is not known whether the same difficulties are experienced by young people with PLEs and whether the extent to which people are aware of their thinking patterns influences the development or maintenance of PLEs.

Problem solving has also been identified as an area for potential remediation in psychosis (Platt & Spivack, 1972) and has been included in treatment packages for young people with PLEs (c.f. Maddox et al., in press). The problem solving skills of young people with PLEs have not been researched to date.

To date the Jump to Conclusions (JTC) bias has not been assessed in young people reporting PLEs (see Section 1.4.2.3 for a description of this bias and its theoretical importance). The presence of this bias earlier in development would provide further evidence that it is a trait factor implicated across the trajectory of PLEs which may be contributing to the persistence or distressing nature of PLEs (Garety et al., 2001) and may also be a potential target of treatment (c.f Waller, Freeman, Jolley, Dunn & Garety, 2011).

#### 1.7.4 Neuropsychological

There have been five notable papers that have reported on neuropsychological factors related to PLEs in young people aged 9-15. These have all been published since 2010, an indication of the early stages of research in this field. One of these (Cullen et al., 2010) reports



on a wide ranging battery of neuropsychological tests, the remaining four report on more specific tests of executive and social cognitive functioning.

Cullen et al. (2010) administered subtests of the Weschler Abbreviated Scale of Intelligence (Weschler, 1999), the Weschler Individual Achievement Test (Weschler, 2005), the Wide Range Assessment of Memory and Learning (Sheslow & Adams, 2003) and the Delis-Kaplan Executive Function System (Delis et al., 2001) to 28 9-12 year olds identified through community screening to have a triad of putative antecedents to psychosis (Laurens et al., 2011) and 28 individually matched control participants. In line with adult psychosis, prodrome and at risk groups, Cullen et al. report that group membership significantly predicted performance on tests of general intelligence, verbal memory, working memory and response inhibition, although as might be expected from a non clinical sample performance of both groups was within the typical range and was not impaired in a clinically significant manner. However, these young people were selected based on a triad of impairments, namely PLEs, clinically significant difficulties on at one least component of the SDQ and a care-giver reported delay or abnormality in speech or motor development. Indeed, Cullen et al.'s purpose in identifying this group is to facilitate research into a cohort that is at high risk of developing psychosis. However, this conceptualisation may not capture the broader population of young people who experience distressing PLEs. At present, it is unknown what proportion of these would reach criteria for the putative antecedents of psychosis, particularly developmental delay. Nor is it known whether they present with similar neuropsychological profiles to young people who are reported to have the putative antecedent triad.

Two (Laurens et al., 2010, Jacobson et al., 2010) studies have focused on response inhibition as indexed by the Go/NoGo task. Laurens et al. reported Event Related Potentials differences in early error processing between a group of young people with PLEs and a control group. Similarly, Jacobson et al. have reported structural and functional brain correlates of PLEs in young people through fMRI scanning of young people during a Go/No-Go task and through the structural techniques of voxel based morphometry (VBM) and diffusion tensor imaging (DTI). Despite non-significant task performance differences between the PLE and control groups of children, fMRI analysis revealed significant activation differences between these groups. Moreover the VBM and DTI analyses revealed differences in structural volume and connectivity, particularly in the left inferior temporal lobe, in the right early visual processing tract and the left hippocampus along the cingulum. Aberrant connections in the right early visual processing tract may be associated with response inhibition (c.f. Laurens et al. 2010 and Jacobson et al., 2010) while those in parahippocampal areas may be associated with verbal memory, not assessed by Jacobson et al. but which was reported to be reduced by Cullen et al., 2010.

Two papers have been published which have examined social components of neuropsychological function in young people with PLEs. In the first of these Barragan, Laurens,

Navarro and Obiols (2011) report significant associations between PLEs and the Impulsive Nonconformity component of schizotypy and ToM performance. These results suggest differential relationships between components of schizotypy and types of PLEs with ToM. Poorer ToM was associated with first rank PLEs (e.g. thought insertion, external control of self, thought broadcast or voice hearing) while persecutory beliefs were associated with better ToM performance. The authors postulate that these findings are indicative of a trait dependent developmental impairment associated with PLEs and schizotypy, which in young people is independent of confounding factors which may influence the inconsistent findings in research with adults and schizophrenia.

Finally, in a longitudinal population study Thompson et al (2011) did not find a significant association between emotion recognition at age 8 and PLEs at age 11. They suggest that this does not reflect insensitivity of instruments, but may reflect later development of emotion recognition impairment; either through loss of early competence or through the failure to acquire more subtle later developing skills. It may also be that emotion recognition deficits would be seen at an early age in those prone to later development of psychosis, but that assessment of PLEs alone is not sensitive enough to identify this group. The findings of Thompson et al. are limited by the absence of an emotion recognition measure at age 11 which precludes analysis of any concurrent relationship between PLEs and emotion processing.

There have been several reports of impaired social functioning in the early stages of psychosis, with prognosis poorer where social function is reduced (e.g. Carpenter & Strauss, 1991). This impairment may reflect the influence of other aspects of psychosis on social functioning, but may also depend at least in part on social cognitive function. It is not currently known whether young people who report PLEs are impaired in social functioning and whether this is associated with symptoms or social cognitive functioning.

In summary, the research to date that has been conducted with young people from community samples has indicated impairments of social cognition, verbal memory and working memory, executive function and general IQ, in the context of either PLEs or a putative triad of impairments. It is not known how these young people would differ from referred young people, nor is it known whether the neuropsychological impairments reported by Cullen et al. (2010), would be present in a group without the full triad of antecedents.

### **1.8 Is clinical intervention required for a common experience?**

As reviewed above the incidence of psychotic like or unusual experiences across the life course is markedly higher than the incidence or prevalence of psychotic disorder. Despite this, there are suggestions in the literature from community samples and from models of psychosis that a proportion of these might benefit from clinical intervention.

We are not currently able to reliably distinguish PLE's that are an expression of a vulnerability to psychosis, that are clinically associated with other syndromes or that are part of

normative development. Even in the absence of this ability, both the quasi-dimensional model (van Os et al, 2008) and psychological models of psychotic experiences (Garety et al., 2001, 2007; Chadwick, Birchwood & Trower, 1996) would predict that intervention with distressing PLEs in childhood has the potential to protect against future mental ill health by increasing resilience to stressors.

However the more compelling argument is that levels of distress that have been reported to be associated with PLEs indicate that intervention is warranted (Armando et al., 2010; Jung et al., 2009; Kinoshita et al., 2011; Nishida et al., 2009; Polanczyk et al., 2010; see Section 1.7.1). While the causal direction of these associations is not clear, intervention for clinically significant distress and to reduce negative impact on functioning during formative social and academic years, would seem justified. Reductions in functioning in childhood and adolescence have clear impact on academic and social development, and have also been described as a risk factor for further mental health difficulties in a sample of adolescents and young adults (Fusar-Poli et al., 2010).

### **1.9 This thesis**

We do not have a clear understanding of how young referred people with and without PLEs compare, as the studies conducted to date have been general population or community studies. The research presented here seeks to provide the first description of referred children who report PLEs.

There has been a recent increase in attention paid to the presentation of PLEs in this age group. To date this attention has been directed primarily to the identification of groups in the general population who may be at higher risk than their peers of developing psychosis in later life and therefore form a cohort of interest for longitudinal studies seeking to delineate the distal and proximal precursors to psychosis. However, little attention has been paid to young people who are already in contact with mental health services, but without a diagnosed mental health problem. The prevalence of PLEs in this group, and the cognitive, social, emotional and neuropsychological correlates of PLEs have not previously been investigated. In particular, it is not yet known whether other potential vulnerability factors for the later development of an at-risk mental state co-occur with PLEs. Characterising the psychological processes associated with the presence and severity of PLEs in this group will help to inform our understanding of psychosis risk and vulnerability, and the development of interventions designed to increase resilience and effectively manage concurrent effects of PLEs.

There are multiple factors of potential interest which the existing research reviewed above indicates would differentiate between young people with and without distressing PLEs. Within the constraints of this project factors were chosen that were most theoretically important or most likely to show predicted differences within a modest sample.

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## 1.10 Research Hypotheses

Two complementary sets of hypotheses are described here. The first pertains to factors hypothesised to be predictive of the frequency and severity of PLEs in a group of referred young people. The second pertains to factors that distinguish between self seeking young people with PLEs and concurrent distress (PLE-ED) and clinical controls (CC) (see Chapter 2).

We hypothesised that PLEs would be present in around 70% of our sample, but that as the group were referred, a higher proportion of children than in the general population would report concurrent distress. Specifically, we hypothesised that around half of these children would report PLEs with concurrent emotional upset. We also hypothesised that, as in the general population, parental report of PLEs would be lower than self-reported PLEs.

### 1.10.1 Factors predictive of PLEs

#### 1.10.1.1 *Clinical and emotional*

1a) The frequency & severity of PLEs in referred children will be associated with increased levels of depression and anxiety.

#### 1.10.1.2 *Social and Environmental*

The frequency and severity of PLEs will be associated with:

- 2a) higher rates of bullying
- 2b) higher rates of loneliness and lower rates of perceived social support
- 2c) higher levels of negative life events

#### 1.10.1.3 *Cognitive*

The frequency and severity of PLEs will be associated with:

- 3a) A probabilistic reasoning bias
- 3b) more negatively biased schema of self and others
- 3c) higher rates of rumination
- 3d) poorer meta-cognitive awareness

### 1.10.2 Factors that distinguish between distressed children reporting PLEs and clinical controls.

No directional hypotheses are made about variation in components of the SDQ, but exploratory analyses of these was conducted. Similarly, an exploratory analysis was conducted to examine whether PLEs were associated with more externalising or internalising reasons for initial referral.

#### 1.10.2.1 *Clinical and emotional*

1b) Higher levels anxiety and depression related symptoms will be reported by the PLE-ED group.

*1.10.2.2 Social and Environmental*

The PLE-ED group will report:

2d) higher rates of bullying

2e) higher rates of loneliness and lower rates of perceived social support

2f) higher levels of negative life events

*1.10.2.3. Cognitive*

The PLE-ED group will present with:

3e) a greater likelihood of JTC bias

3f) more negatively biased schema of self and others

3g) higher rates of rumination

3h) poorer meta-cognitive awareness

3i) poorer social problem solving skills.

*1.10.2.4. Neuropsychological*

The PLE-ED group will have:

4a) Lower verbal ability

4b) Poorer verbal learning ability

## **2. Method**

### **2.1. Overview of the research context**

The research presented here was conducted in the context of the Coping with Unusual Experiences for Children Study (CUES). The CUES study is a pilot randomised controlled trial of a CBT protocol for young people reporting PLEs and emotional distress. Its name, CUES, was developed to promote a non-stigmatising and non-diagnostic approach to the experiences reported by these children. CUES is based in a community Child and Adolescent Mental Health service (CAMH/CAMHS) within the South London and Maudsley (SLAM) NHS Foundation Trust. CUES is a collaboration between researchers and clinicians from SLAM and the Institute of Psychiatry, King's College London, and the research trial is currently funded by the Guy's and St Thomas' Charity.

The community CAMH service provides interventions for children with moderately severe emotional and behavioural problems, in the absence of diagnosable mental health problems. The service receives referrals from GPs and schools. Prior to the commencement of the CUES study, it was estimated by local CAMHS clinicians involved in CUES that 50% of children on their waiting lists were aged 8-14, had distressing PLEs and would potentially benefit from this new intervention.

Ethical approval for the research was granted by the NRES Committee London-Hampstead (REC Ref 11/LO/0023). Research and Development approval was granted by the SLAM R&D committee (ref R&D2011/028) and the CAMHS Clinical Academic Group (CAG).

### **2.4 Service user involvement**

Young people who use CAMH services, and their parents, were consulted in detail throughout the development of the CUES project, including in the assessments reported on here. In the main the feedback from parent and service user focus groups was positive, but there were concerns expressed. First, the use of language in some of the standardised assessments was felt to be too advanced for younger participants. Following this feedback the measures were piloted with a small group of 8 and 9 year olds, who demonstrated a good understanding of the language and content of the assessments. Second, there was a concern about the negative start and end to the BCSS. In response, the order of questions in the BCSS was changed so that more positive or neutral items were administered at the start and end of the measure. Third, concern about the complexity of the information sheet for parents led to the development of an additional information sheet which was brief and simple and provided alongside the more in depth version for those who wanted further information. Suggestions were taken from parents and young people about the use of games and activities during assessment sessions to facilitate

engagement and reduce stress. As a result of these suggestions a greater variety of activities was offered to young people, including app based games on tablet computers.

Young people were involved in the development of the Social Problem Solving Task, with service users commenting on the research team's initial plans for stories and providing alternative, more relevant ideas. They also generated lists of names for characters to further ensure that stories appeared relevant to the population of children referred to the community CAMH service.

## **2.2 Procedure**

### **2.2.1 Recruitment**

Young people aged 8-14 were recruited directly from the waiting list at a Tier 2 community CAMH service. The CUES study had access to all referrals, though some referrals were lost to recruitment as their cases were closed by CAMHS before the research team made contact with them (see Figure 3.1). The children and their families were help seeking, and could expect to wait 3-6 months before receiving any intervention from CAMHS, unless they were identified as presenting with greater risk or more urgent need. All families with a young person referred to the service were sent information sheets about CUES (parent and young person versions), consent and assent forms (see Appendix 1). They were telephoned two weeks later and invited to participate in the study.

Informed consent from parent and young person was obtained after a member of the research team met with them and went through the information sheets. They were given the opportunity to ask any questions about the research. It was made clear to participants that they could leave the study at any point should they wish, without giving a reason.

Participants' treatment and care from CAMHS was not affected by participation in CUES. If a young person reached the top of the CAMHS waiting list whilst taking part in the CUES study, their CAMHS care continued as normal. If the young person completed their CAMHS intervention whilst still taking part in the CUES study, their case remained open until the follow-up assessments for the study had been completed. If any form of risk or new information became apparent during the CUES screening or treatment process, the clinical team were informed immediately so that appropriate action could be taken. Care coordination was held by the CAMHS team at all times.

### **2.2.2 The CUES study protocol**

The CUES study consisted of three phases. These were, first, pre-treatment assessment and screening; second, randomisation to therapy or waitlist control; third, post-therapy/post-waitlist assessment. Pre-treatment assessments were conducted by a research worker, a research therapist and a clinical psychologist in training (CA). After screening (see Section 2.2.3) participants eligible for the treatment phase (see Section 2.2.2.2) were randomised either to the

new CBT treatment or waitlist. Participants on the waitlist were offered the new treatment 12 weeks after randomisation. Therapy was provided by the research therapist and the clinical psychologist in training. The research worker conducting the post-therapy/waitlist assessments was blind to participants' randomisation to therapy or waitlist conditions. Randomisation to therapy/waitlist control conditions was performed by the Institute of Psychiatry, KCL, Mental Health & Neurosciences Clinical Trials Unit. After stratifying for gender, the randomisation procedure involved the use of randomised permuted blocks with a randomly-chosen block size of either 4, 6 or 8.

Further details of inclusion and exclusion criteria are provided below.

#### *2.2.2.1 Inclusion and Exclusion criteria*

##### *Inclusion criteria for the CUES Screening*

Children aged 8-14 referred to CAMHS, were invited to participate in the study. Ethical approval was obtained to use translation and interpreter services for potential participants with limited English. Informed consent from the caregiver and assent from the young person were prerequisite for participation.

##### *Exclusion criteria for the CUES Screening*

Young people were excluded from the study if they were aged younger than 8 or older than 14 years at the time of referral. They were also excluded if either they or their parents declined to consent.

#### *2.2.2.2. Additional criteria for the CUES Treatment study*

##### *Inclusion criteria for the CUES Treatment study*

Young people scoring, by their own report, in the clinical range on the emotional symptoms subscale of the Strengths and Difficulties questionnaire (SDQ; Goodman et al., 2000) and endorsing one or more items on the Psychotic Like Experiences Questionnaire (PLEQ; Laurens et al., 2007; 2011) were included in the Treatment study. It was necessary for them to be planning to reside locally for the duration of the study (in order to complete therapy and measures).

##### *Exclusion criteria:*

Young people were excluded from the treatment study who scored, by their own report, in the non-clinical range on the SDQ emotional symptoms subscale; or reported no PLEs; or had unstable residential arrangements (making a move away likely).

### **2.2.3 Screening**

#### *2.3.3.1 Screening protocol*

The screening phase of the study served two main purposes. The first was to identify young people eligible for inclusion in the CUES treatment trial, the second was to develop a



more detailed understanding of the variations in clinical, emotional, cognitive, social and neuropsychological profiles between those young people experiencing unusual experiences and those presenting with other forms of distress and impairment.

Screening assessments were completed by all participants. Participants eligible for the CUES treatment trial were also re-assessed 12 weeks after randomisation (the post treatment or post waitlist control assessment), and one month after the completion of treatment. Data presented in this thesis focuses on the pre-treatment assessments, which were completed before randomisation.

### 2.3 Detail of Assessment Measures

All assessment measures, with the exception of those that are copyrighted (BPVS, RAVLT) are included at Appendix 2.

#### 2.3.1 Clinical measures

Clinical measures were chosen to measure PLEs and concurrent distress. In addition measures of depression and anxiety were included as both these have been posited as being particularly influential in the aetiology and maintenance of psychosis.

##### 2.3.1.1 *Strengths and Difficulties Questionnaire (SDQ, Goodman et al., 2000)*

The SDQ is a questionnaire developed for screening 3-16 year olds for behavioural and emotional difficulties. Versions of the SDQ used here are those for completion by parents or caregivers and those for self-completion by 11-17 year olds (Goodman et al., 1998). The SDQ has been reported to be both valid and reliable (Goodman, 2001), with the five subscales described below seen to be best suited to clinical rather than low risk populations, and therefore suitable for the research presented here (Goodman, Lamping & Ploubidis, 2010). Although originally designed for 11-17 year olds to self complete, it has been shown that the self report version has acceptable psychometric properties in 8-10 year olds (Muris et al., 2004).

The SDQ has three components. The first component consists of 25 items each of which asks about a different psychological attribute, some positive and some negative. These 25 items are divided between five scales each with 5 items; emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behaviours. Each item is rated by participants on a three point scale; 0 – not true, 1 – somewhat true, 2 – certainly true. Each scale score (0-10) is derived by summing its five items. The first four of these scales together generate a total difficulties score (0-40, Goodman, 1997).

The second component assesses the impact of any difficulties identified through questions about chronicity, distress, social impairment, and burden to others. Finally the third component, which is included post-treatment includes two questions about any reduction of problems following treatment and whether treatment has helped in any other way. Follow-up

questionnaires narrow the window of time enquired about from six months to one month, to facilitate the detection of change following treatment.

### 2.3.1.2 Psychotic-like experiences questionnaire (PLEQ, Laurens et al., 2007; 2011)

Unusual experiences were screened for using the Psychotic Like Experiences Questionnaire (PLE) which has been developed by Laurens et al (2007; 2011) for identifying unusual experiences in a community sample of young people. The PLEQ comprises nine items (see Figure 2.1 for individual items). Five of these items were adapted by Laurens (2007) from the Diagnostic Interview Schedule for Children (Costello et al., 1982) and had previously been reported to be predictive of schizophreniform disorder (Poulton et al., 2000).

PLE questionnaire
<p><b>Conviction</b> (0 Not True, 1 Somewhat True, 2 Certainly True)</p> <ol style="list-style-type: none"> <li>1. Some people believe that their thoughts can be read. Have other people ever read your thoughts?*</li> <li>2. Have you ever believed that you were being sent special messages through the television?*</li> <li>3. Have you ever thought that you were being followed or spied on?*</li> <li>4. Have you ever heard voices that other people could not hear?*</li> <li>5. Have you ever felt that you were under the control of some special power?</li> <li>6. Have you ever known what another person was thinking even though that person wasn't speaking?</li> <li>7. Have you ever felt as though your body has been changed in some way that you could not understand?*</li> <li>8. Do you have any special powers that other people don't have?</li> <li>9. Have you ever seen something or someone that other people could not see?</li> </ol> <p>* adapted from the Diagnostic Interview Schedule for Children</p> <p>For each endorsed item:</p> <p><b>Frequency:</b> How often has it happened in the last two weeks? 0 Not at all, 1 Only once, 2 2-4 times, 3 5 or more times</p> <p><b>Distress:</b> How much has it upset you? 0 Not at all, 1 Only a little, 2 Quite a lot, 3, A great deal</p> <p><b>Impact:</b> How much has it made things hard at home or school? 0 Not at all, 1 Only a little, 2 Quite a lot, 3, A great deal</p> <p><b>Total Conviction</b> range 0-18  <b>Total Frequency, Distress and Impact</b> each range 0-27  <b>Total PLE</b> range 0-99</p> <p><b>PLE last year</b>  Have you had any of these experiences in the last year?  (0 Not True, 1 Somewhat True, 2 Certainly True)</p>

**Figure 2.1 Psychotic Like Experiences Questionnaire items**

Each item contained questions indexing conviction, frequency, distress and impact over the preceding two weeks. Each of these was summed across the 9 items to provide accumulative measures of conviction, frequency, distress and impact. A composite measure was created as a

summary variable of PLE experience in the two weeks prior to assessment (Total PLE). Finally, an additional question asked whether any of the PLEs had occurred in the preceding year.

#### *2.3.1.3 Spence Children's Anxiety Scale (SCAS, Spence, 1998)*

The SCAS is a well validated (Spence, Barrett & Turner, 2003) scale used to assess the severity of anxiety symptoms. The scale measures domains of anxiety consistent with DSM-IV (APA, 1994) so that questions are asked to assess symptoms of generalized anxiety, panic/agoraphobia, social phobia, separation anxiety, obsessive compulsive disorder and physical injury fears. The child self-report version of the SCAS consists of 44 items, 6 of which are positive filler questions which are not scored. The parent/caregiver report version consists of 38 questions enquiring about the same symptoms as the child self-report version. On each, respondents are asked to rate the degree to which a symptom is experienced on a 4-point frequency scale (never 0, sometimes 1, often 2, and always 3). Parent report and child self report versions were used in the research presented here.

The SCAS has been widely used for clinical purposes, in research and community screening projects. It has published normative data and t-scores to identify whether levels of reported symptoms are in community or clinical ranges (<http://www.scaswebsite.com>).

#### *2.3.1.4 Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995)*

The Short Mood and Feelings Questionnaire is a 13 item questionnaire used to screen young people for depression. The 13 item questionnaire was developed from the full 33 item MFQ with items chosen to retain 60% sensitivity and 85% specificity with a cut off score of 8 or more (Angold et al., 1995). It has good convergent validity with other assessment measures (Angold et al., 1995). On each item participants are asked to rate the degree to which a symptom was experienced in the preceding two weeks on a three point scale; 0 – Not true, 1 – Sometimes true, 2 – True. It was initially developed for use with 6-17 year olds, and well validated for 6-11 years olds (Angold et al., 1995). Since its development the MFQ has been extensively used in research and clinical settings.

### **2.3.2 Social and Environmental Measures**

Following research outlined above (Sections 1.4.2.1 and 1.7.2) measures were chosen to assess the relationship between PLEs and social environmental risk factors identified in previous research in clinical and population studies. Measures are included to index trauma and social functioning. Trauma is indexed here through significant life events. Social functioning is indexed through measures of bullying, social support and loneliness.

#### *2.3.2.1 Life Events Questionnaire (LEI; Wilkinson et al., 2009)*

The LEI (Wilkinson et al, 2009) asks about recent life events (including disappointments, losses and dangers to self and others) which are rated for impact and chronicity by participants. Events that had a moderately or severely undesirable impact and that had lasted for 2 weeks are counted and summed to provide a total life events score.

#### 2.3.2.2 *Bullying (adapted from Schonert-Reichl et al., 2010)*

Experiences of bullying during the current school year were assessed using the victimisation at school items from the Middle Years Development Instrument (MDI, Schonert-Reichl et al., 2010). This instrument has been used for a population based study of child development and wellbeing, and was administered to 3026 children in Vancouver after extensive piloting and validation work. The victimisation at school items require participants to identify how often (0 never, 1 rarely, 2 sometimes, 3 often) they have experienced physical, verbal, social, cyber and any other type of bullying, giving a maximum score of 12. This scale was adapted from the MDI in which children were asked whether there occurred not at all, about every month, about every week or several times a week. At the start of administration a brief definition of bullying is provided, and each of the types of bullying is clearly explained with examples as each item is presented.

#### 2.3.2.3 *Social Support (Bogat, Chin, Sabbath & Schwartz, 1983)*

Social support was measured using items from the Emotional Support subscale of the Children's Social Support Questionnaire (Bogat et al. 1983). These items require participants to identify up to ten people who they can count on to: 1, listen while they talk; 2, make them feel better when they are upset; 3, care about them and 4, be there for them. These items give a maximum score of 40.

#### 2.3.2.4 *Loneliness (Rusell, 1996)*

Loneliness was measured using items from the UCLA loneliness scale (Rusell, 1996). The original scale consists of 20 items asking about experiences of loneliness. This scale and shortened versions of it have been used with children in previous research (e.g. Chipuer & Pretty, 2007; Valkenburgh & Peter, 2007). Four items were chosen for this research from the most simply phrased, highest loading items.

On the items selected for this research participants are asked how often (0 never, 1 rarely, 2 sometimes, 3 always) they feel alone, close to people, left out and that there are people they can talk to. The positive items (close to people, that there are people they can talk to) are reverse scored so that the items when summed give a maximum loneliness score of 12, with high scores reflecting high levels of loneliness.

### 2.3.3 Cognitive Measures

Rumination, a jump to conclusion bias and negative schemas of self and others were identified above (see Section 1.7.3) as being particularly pervasive examples of cognitive processing associated with clinical and non-clinical psychotic symptoms and experiences. They are each assessed here. Problem solving has been identified as an area of potential intervention, and so social problem solving abilities were assessed.

In addition, it was suggested above (Section 1.5) that metacognitive developmental stage might contribute to the high prevalence of PLEs in childhood. As metacognitive skills such as self-reflection and insight develop, it may be that anomalous experiences are differentially processed. These processes have been outlined in Grant's (2001) model of psychological mindedness, and have not been assessed in children who report PLEs prior to the research presented here.

#### 2.3.3.1 Probabilistic Reasoning (*The "Beads Task", Garety et al., 2005*)

The Beads Task was originally adapted to measure the Jumping to Conclusions reasoning bias in people with psychosis by Garety and colleagues (Huq et al., 1988, Garety et al., 1991; original task reported by Philips & Edwards, 1966). The task requires participants to decide from which of two jars a series of displayed beads has been drawn. These two jars contain a mix of two different colours in either a 85:15 or 60:40 ratio, so that one jar is mainly one colour and the other jar is mainly the other colour. The JTC bias is classified as making a decision about which jar beads are being displayed from after presentation of two or fewer beads (Garety et al., 2005; So et al., 2011).

The task was presented to participants on PowerPoint slides, which first introduced the task, and then showed participants one bead at a time. A bar was included at the bottom of each bead presentation slide which recorded which beads had been previously been shown so that task performance was not confounded by short term memory ability. Participants were allowed to see as many beads as they required, up to a maximum of 20, before making a decision. They are asked to decide only when they are certain. Beads are presented in a fixed and predetermined order. It has not been used with young people prior to the research presented here.

#### 2.3.3.2 Brief Core Schema Scale (BCSS; Fowler et al., 2006)

The Brief Core Schema Scale (BCSS) was developed by Fowler et al (2006) to provide a measure of schemata of self and others, specifically for use in psychosis. It has been used with young people (mean age 19.7) at high risk for psychosis (Stowkowy & Addington, 2011) but to our knowledge it has not been used previously with young people in the age group recruited for this research.

Four dimensions of self and other schemata are measured; positive self, negative self, positive other and negative other. The BCSS is a 24 item scale, with scores for each of the schemata components being derived from the sum score of 6 items (range 0-24). Each item consists of a positive or negative statement about the self or others. On each item, participants are asked to identify whether or not they believe the statement (YES/NO). If they respond 'YES' they are also asked to rate the strength of their belief on a four point scale; 1 – believe it slightly, 2 – believe it moderately, 3 – believe it very much, 4 – believe it totally).

#### 2.3.3.3 *Child Response Style Questionnaire (CRSQ; Meiser-Stedman et al., 2007)*

Tendency to respond ruminatively is assessed here by the CRSQ. This was developed from the Ruminative Response Scale (RRS) of the Response Styles Questionnaire developed by Nolen-Hoeksema & Morrow (1991). Versions of the RRS have been used with several samples of children and adolescents (e.g. Abela et al., 2002). The version used here, the CRSQ, was adapted for use with British school aged children (Meiser-Stedman, Dalgleish, Smith, Yule & Glucksman, 2007), with items changed to use British English e.g. "I think I won't be able to do my job/work because I feel so badly" was changed to "I think I won't be able to do my work at school because I feel so bad". In addition, the CRSQ was designed to measure ruminative responses following trauma and so items were changed to broaden assessment from responses to sadness to also include responses to fear. For example, "Think about how sad you feel" was changed to "Think about how sad or afraid you feel". This focus makes this measure particularly pertinent to the research presented here, as both anxiety or fear based responses and low mood have been associated with the development of PLEs (see Section 1.4.2.2). Meiser-Steadman et al. did not include the item 'I listen to sad music' as their focus was on fear and anxiety based responses. Given the theoretical interest in both low mood and anxiety here, this item was retained. Each item of the 22 item scale of the CRSQ is presented with a four point Likert scale, which requires participants to indicate how often they tend to engage in the ruminative behaviour (0 never to 3 always), thus providing a maximum score of 66.

Meiser-Stedman et al (2007) report adequate psychometric properties of this adapted rumination measure, with internal reliability comparable to the original measure (Nolen-Hoeksema & Morrow, 1991).

#### 2.3.3.4 *The Self-Reflection and Insight Scale for Youth (SRIS; Sauter, Heyne, Blöte, Van Widenfelt & Westenberg, 2010)*

Grant, Franklin & Langford's (2002) Self-Reflection and Insight Scale has been adapted for use with children by Sauter et al. (2010). Sauter et al report adequate psychometric properties of their adapted measure, albeit with a sample of Dutch school children. An English version of the Sauter et al. measure was provided by the authors and was used here. Minor changes were made to language in the measure (for example, 'I have a definite need to

understand how my mind works’ was changed to ‘I really want to understand how my mind works’) following piloting with a small sample of British children. In addition, the version supplied by the authors of the instrument has a 6 point Likert scale. This was adapted for use in CUES to a 5 point scale as Likert scales with odd numbers do not force participants to make a choice about whether they agree or disagree. Normative scales for this measure have not been published and so this adaptation does not affect its interpretation.

The SRIS comprises 17 items, each answered on 5 point scale ranging from 1 strongly disagree to 5 strongly agree (for example, I often notice that I’m feeling something, but I often don’t know exactly what I’m feeling). These items are scored and summed to form two scales, the Self-reflection subscale and the Insight sub-scale according to the procedure outlined by Sauter et al. (2010).

#### 2.3.3.5 Social Problem Solving Task (SPST)

A novel Social Problem Solving Task (SPST) was developed for use in this research. Previously, the ability to solve social problems has been assessed using the Means Ends Problem Solving Task (MEPS; Shure & Spivack, 1972) and the Social Situations Analysis (SSA; Connolly, Burnstein, Stevens & White, 1987 unpublished; in Joffe Dobson, Fine, Marriage & Haley, 1990). The MEPS is presented verbally. Participants are provided with the beginning and ending of a set of stories and are asked to generate the middle section. MEPS scoring system allows for identification of relevant and irrelevant means as well as the participants awareness of obstacles to goals. The SSA is open ended, and has a finer graded scoring system which allows for categorisation of social problem-solving. The SSA is presented using a series of pictures of difficult events (e.g. someone being laughed at in the playground) and participants are asked to generate as many possible solutions as they can, and then to chose their preferred option. They are also asked to indicate the positive and negative outcomes that might follow from their preferred choice.

Joffe et al. (1990) identify that the sensitivity of the MEPS (Shure & Spivack, 1972) to social problem solving difficulties is limited by task constraints. In particular the provision of a fixed end to the problem reduces the opportunity for assessment of alternative social problem solving behaviour as only one course of action is assessed. It also prevents assessment of participant’s expectations of outcome. They used both the MEPS and the SSA to examine the social problem solving skills of adolescents and demonstrated the utility of using both to enable the assessment of the ability to generate relevant means, as well as to characterise the types of responses elicited. Therefore, the development of the SPST for this research has been informed by both the MEPS, SSA and the findings of Joffe et al. (1990).

In the SPST participants are presented with the beginning of three stories. Stories are presented verbally, accompanied by a written transcript and an accompanying picture. Participants are asked to generate as many possible ways of solving this problem as they can.

They are asked to choose their personally preferred solution, and to identify positive and negative outcomes from their choice, as well as barriers to their preferred solution. Each of these are summed across stories to provide measures outlined in Figure 2.2. Scoring guides were developed for each story (see Appendix 3) and reliability was ascertained through a consensus scoring procedure. A third of all responses were double coded by 4 members of the research team, with an agreement rate of 93.89%.

<u>SPST Scoring</u>	
1.	Number of relevant means of solving problems
2.	Number of directly assertive, indirectly assertive, passive, aggressive, passive aggressive and not scorable means generated
3.	Personal preference category (directly assertive, indirectly assertive, passive, aggressive, passive aggressive and not scorable).
4.	Number of positive outcomes perceived as possible from personally preferred means.
5.	Number of negative outcomes perceived as possible from personally preferred means.
6.	Number of obstacles to achieving personally preferred solution.

**Figure 2.2. SPST Categories scored**

Adolescent service users within SLAM inpatient and community services were consulted about story theme, content and characters. Task material was edited following feedback to incorporate suggestions made by the young people and edited versions were further checked with them. Accompanying illustrations were developed and donated by a cartoonist (Richard Jolley, RGJ) specifically for use in this task.

#### 2.3.4 Neuropsychological measures

##### 2.3.4.1. *British Picture Vocabulary Scale II (BPVS; Dunn, Dunn, Whetton, & Burley, 1997)*

The British Picture Vocabulary Scale II; BPVS (Dunn, Dunn, Whetton, & Burley, 1997) is a measure of receptive vocabulary knowledge level. Participants are required which of an array of four pictures best represents words that are read aloud to them. Receptive vocabulary is used here as a measure of verbal ability.

##### 2.3.4.2 *Verbal memory: Rey Auditory Verbal Learning Test (RAVLT; Schmidt, 2004)*

The RAVLT is a brief test of verbal learning that used a fixed order word list. The original version, developed by Rey (1941, 1958, in Schmidt, 2004) consisted of a 15 word list, presenting five times with an assessment of recall after each presentation. It also included a recognition memory test. The word list continues to contain 15 concrete nouns which are not related to each other, so that semantic organisation does not interfere with verbal learning.



The procedure used here follows Taylor's (1959, in Schmidt, 2004) adaptation of the RAVLT, as further adapted by Forrester & Geffen (1991) for use with 7-15 year olds. The word list is presented five times, with recall after each presentation (Trials I-V). A second list is then presented and recalled, before participants are asked to recall the first list (Trial VI). After a twenty minute filled delay, participants are again required to recall the first list (delayed recall). Finally, they are presented with a word list recognition task and asked to identify whether words were previously presented to them and if so which list they were on. This enables assessment of recognition of words correctly identified as having been included in the first list and of the number of false positives identified.

#### **2.4. Assessment procedure**

Young people's responses for clinical, functioning and cognitive measures (with the exception of the Social Problem Solving Task) were collected using an online survey (SelectSurvey.NET 2.8.5). This was completed in the presence of a researcher, with support as necessary. Parent responses were also collected for the SDQ, PLE, Spence and MFQ. These were completed in pencil and paper questionnaires and the data later entered into the online survey. The online survey collated responses for export into SPSS 15 for analysis. Neuropsychological measures were administered following the published standardised protocols. Assessments were divided into three assessment sessions. Assessments were not administered in a fixed order. Researchers used clinical judgment to assess and maintain the engagement of the child throughout, using breaks for games or activities as needed, and by ensuring that more demanding assessments were interspersed with those that were easier to access. The PLE measure was not administered in the first assessment session, in order to enable initial engagement to develop prior to administration.

#### **2.5 Overview of planned statistical analysis**

Two main sets of analyses are reported in Chapter 3. The first is a correlational analysis of the relationships between self reported PLEs and other factors across the whole sample and an exploratory regression analysis of factors associated with PLEs.

The second is a comparison of the PLE-ED and CC groups. These groups were defined according to the same criteria used for inclusion in the CUES treatment study (see section 2.2.2.2). Children who self reported PLEs and emotional distress ('PLE-ED' group) were compared to the rest of the screened children ('Clinical Control' CC group). This second set of analyses allows for a more detailed exploration of the factors that distinguish the PLE-ED and CC groups from each other, and identification of factors that vary with PLEs and concurrent emotional distress. This includes further exploration of neuropsychological factors (RAVLT) and the novel, experimental SPST.

These analyses were performed using ANOVAs, except for the JTC. Variation between groups in the proportion of young people showing the JTC bias was subject to a chi squared

analysis. It is recognised that a difference in verbal ability between groups may confound any significant difference in verbal memory. As such, analysis of performance on the RAVLT was subject to ANCOVA with verbal ability co-varied. Indeed, this highlights one methodological disadvantage of the screening strategy employed here for recruitment in the analysis of neuropsychological measures. It is not possible to recruit matched comparison groups.

These two sets of analyses are presented because the PLE-ED group was defined by both PLE and self reported emotional distress. Thus, given the prevalence of PLEs in the general population described in the research presented in Chapter 1, it is expected that there will be children who report PLEs but do not self report emotional distress. It will be important to examine whether the hypothesised relationships postulated above (see Section 1.10) are independent of this distress, or whether they are confined to a group who might be considered to be more clinically vulnerable.

## 2.6 Preliminary analyses

### 2.6.1 Power

Power was calculated using G\*Power 3.0.5. An a priori compromise power analysis based on a sample size of 28 revealed that for a correlational analysis, with 80% power and alpha set at 0.05, the study could detect a large effect size. For between group comparisons, with two groups of 14 participants, the study had 80% power to detect large effects (c.f. Cohen, 1969,  $f = 0.4$ ), 65% power to detect medium sized effects ( $f = 0.25$ ), and 52% power to detect small effects ( $f = 0.1$ ) at a significance level of .05. The study is thus moderately powered, and review of relevant research suggests that this is acceptable.

As outlined above (see Section 1.7), there is little published research related to PLEs in young clinical samples, and so appropriate published research with either adult psychosis samples or clinic samples of young people with anxiety or depression was reviewed. Examples of the use of these measures in previous research include reports of large effect sizes between group contrasts on the MFQ (2.13, depressed vs non-depressed young people, Daviss et al, 2006) and the SDQ (.78, SDQ emotional subscale, 1.03 emotion subscale, PLE vs non PLE,  $n = 22/26$ , Laurens et al 2010). The sample sizes proposed here are slightly smaller than those in previous studies that have reported significant differences for a Jump to Conclusions bias on the beads task ( $n = 14$  in each of 3 groups, Garety, Hemsley & Wesseley, 1991) and predictive value in the Ruminative Response Scale in predicting depression (7 week follow up  $n = 41$ , 2 groups; Nolen-Hoeksema & Morrow, 1991).

Although there have been a number of large scale studies of neuropsychological processes, there have also been many more experimental studies of people with schizophrenia (first episode, prodrome and chronic) which have revealed significant group differences. The use of a well established paradigm in the research proposed here maximises our ability to detect differences in a moderately powered study. Moreover, our sample size is comparable to many of

those reported in the cross-sectional literature. Johnston et al (2005) report a significant difference between 20 high risk participants who developed psychosis and 7 control participants ( $p = .005$ ) using the RAVLT.

Thus, although the study is underpowered to detect small effects, it does have the power to detect between group effect sizes of the magnitude reported in the literature with well established measures, and is comparable to the existing experimental and cross-sectional literature. We can be relatively certain that group differences reported here are meaningful. However, it is clear that any null results may be a true reflection of an absence of group difference or may reflect a lack of power to detect these differences. It is also clearly underpowered to conduct longitudinal analyses, or to examine the relationship between measures, and any analyses conducted to explore the relationship between symptoms and other variables will be exploratory.

### 2.6.2 Distribution

The distribution of data for each of the PLE-ED and CC groups was examined. Z scores were calculated for both skew and kurtosis for each variable (see Appendix 4). A Z score above 2.58 was considered to be indicative of distribution that was outside the acceptable bounds of normality (Field, 2005, p72). According to this criterion the distribution of the majority of variables were within acceptable bounds of normality. However, some were not normally distributed and so all relevant analyses reported in Chapter 3 were repeated using the non-parametric Kruskal-Wallis Test. The results from these analyses (see Appendix 5) were consistent with the parametric analysis reported below, and so for parsimony all analyses of between group effects reported here were performed with parametric tests, with the clear exception of analyses of categorical variables.

Data was collapsed across group for examination of normality prior to analysis of relationship of PLEs with clinical, social and environmental, cognitive and neuropsychological measures. Normality was examined following the procedure outlined above (see Appendix 4). This revealed the key variable (self reported total PLE) was significantly different from normal, therefore the results presented below of the relationship between variables follows a non-parametric analysis of Spearman's rho.

### 2.6.3 Outliers

In order to check for any outliers in the data set, all scores were standardised and inspected for z scores greater than 3.29 (Field, 2005, p 76). In the whole sample this revealed single outliers in BCSS negative self schema. Removal of the outlier in BCSS negative self schema did not influence the outcome of results reported below, and is retained in analysis. There were also two outliers in Parent reported PLE frequency and single outliers in parent reported PLE upset and impact, and self reported PLE frequency. These variables were not included in whole sample analyses and so their impact is not assessed here. When split by group

one outlier was revealed in Parent report of PLE conviction in the non-randomised group. Removal of this outlier did not influence the outcome of analyses presented below and so it is retained.

#### 2.6.4 Missing data

Measures with missing items were not excluded. Conservative estimates of symptom level may result from this as item scores missing from variables were substituted with 0s. However with the exception of one data set variables had a maximum of three data points missing, and so any conservativeness introduced by this strategy is not viewed as concerning. The single exception was a participant in the PLE-ED group who had 7 missing data points in the MFQ, this participant's MFQ score may therefore represent a conservative estimation of their level of symptoms of depression but is not excluded from analysis.

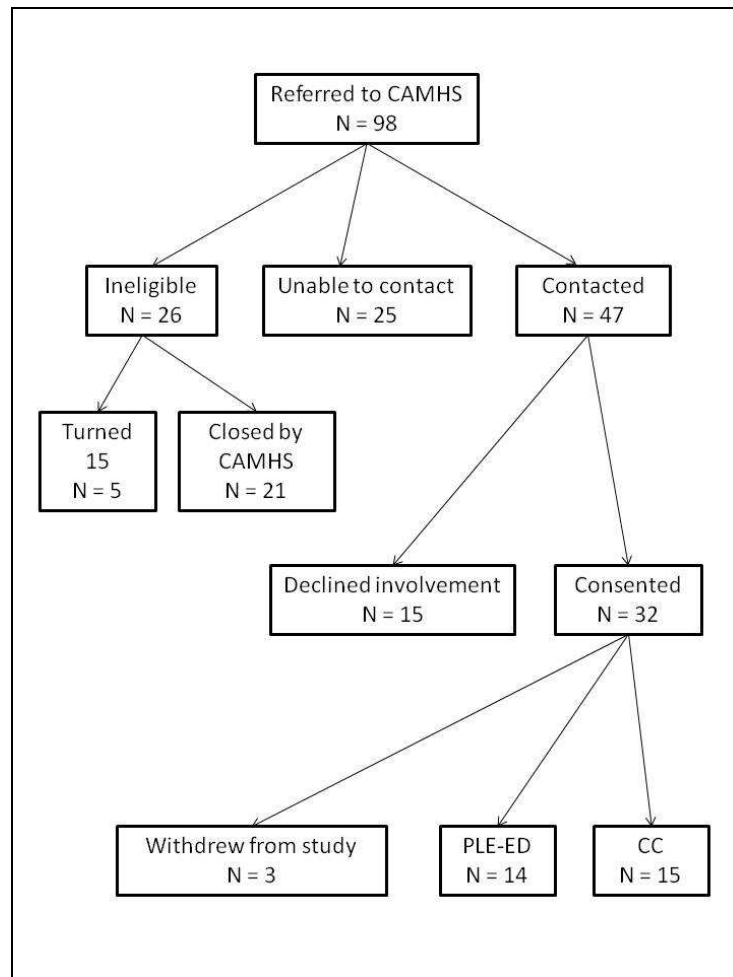
There were six measures for which complete data sets could not be produced. These reflect young people's inability to complete the measure (1 CC delayed recall and recognition RAVLT, 2 CC SRIS) and either errors in the data collection software (1 CC RSQ, 3 CC JTC 60/40 condition) or missing data (1 PLE-ED parent reported PLE, 1 PLE-ED and 1 CC in the SPST).

### 3. Results

#### 3.1 Descriptive Data

##### 3.1.1 Participants

29 participants were assessed (see Figure 3.1). Of these 14 met criteria for inclusion in the CUES treatment study (at least one PLE reported and emotional distress on the self report SDQ; see Section 2.2.2.2) and form the PLE and Emotional Distress (PLE-ED) group. 15 did not meet inclusion criteria for the CUES treatment study (no PLE or no concurrent emotional distress on the self report SDQ), these form the Clinical Control (CC) group. See Table 3.1 for an overview of descriptive data for these groups.



**Figure 3.1. Recruitment of participants to study**

There was no significant effect of group on age ( $F(1, 27) = 2.44, p = .13, \eta_p^2 = .08$ ). The distribution of males and females was significantly different between groups ( $\chi^2(1) = 5.179, p = .035$ ), with a higher proportion of referred girls being allocated to the PLE-ED group. However, with

more males referred (3.14:1 ratio), it would be premature to suggest that this was an effect that reflected a higher propensity for girls to have PLEs and distress.

	<b>Whole Sample</b>	<b>CC</b>	<b>PLE-ED</b>
N	29	15	14
Gender male:female	22:7	14:1	8:6
Age Mean (s.d.)	11 yrs 4.1 mths (1 yr, 11.8 mths)	10 years 9.6 mths (1 yr, 5.87mths)	11 yrs 11.07mths (2 yrs 3.84mths)

**Table 3.1. Descriptive data for whole sample, CC and PLE-ED groups**

The original reason for referral to CAMHS for each participant was classified as concern primarily about externalising difficulties or primarily about internalising difficulties. There was one young person in the PLE-ED group who presented specifically because of concerns about PLEs, this young person is excluded from the following analysis. Data from the remaining participants (see Table 3.2) was subject to Chi Squared analyses which revealed no significant difference in the distribution of reason for referral between groups ( $\chi^2(1) = 2.227, p = .255$ ).

	<b>Internalising</b>	<b>Externalising</b>
PLE-ED	8	5
CC	5	10

**Table 3.2 Primary area of concern at referral for participants in each group**

### 3.1.2 PLEs reported

Figure 3.2 shows the PLEs reported by young people in the PLE-ED group in the two weeks prior to assessment. The majority of these young people reported more than one PLE, with various degrees of upset and impact attributed to the PLE. The most frequently endorsed PLEs were hearing voices and seeing something or someone that others didn't (both  $n = 9$ ). These were followed in frequency by being able to read others thoughts ( $n=7$ ), being followed or spied on ( $n=7$ ) and possessing special powers ( $n=6$ ). PLEs that were less frequently endorsed were being under the control of a special power ( $n=4$ ), being sent messages through the television ( $n=3$ ), unexplained bodily changes ( $n=3$ ) and having thoughts read by others ( $n=1$ ).

PLE-ED	PLE	Frequency in past 2 weeks	Conviction	Distress	Impact
1	Been followed/spied on	5 or more times	Certainly true	Not at all	Only a little
	Hear voices	2-4 times	Certainly true	Quite a lot	Not at all
	Able to read thoughts	2-4 times	Certainly true	A great deal	Not at all
	Possess special powers	5 or more times	Certainly true	Not at all	Not at all
2	Heard voices	5 or more times	Certainly true	Only a little	Only a little
	Under the control of a special power	2-4 times	Certainly true	Quite a lot	Only a little
	Able to read thoughts	5 or more times	Certainly true	Quite a lot	Only a little
	Changes to body	2-4 times	Certainly true	Quite a lot	Only a little
	Seen something others didn't	Only once	Somewhat true	Not at all	Not at all
3	Thoughts read by others	2-4 times	Somewhat true	Only a little	Quite a lot
4	Sent special messages through the TV	5 or more times	Somewhat true	Only a little	Only a little
	Been followed/spied on	2-4 times	Somewhat true	Only a little	Only a little
	Heard voices	2-4 times	Somewhat true	Only a little	Only a little
	Under the control of a special power	2-4 times	Somewhat true	Only a little	Quite a lot
	Able to read thoughts	5 or more times	Somewhat true	Only a little	Only a little
	Changes to body	2-4 times	Somewhat true	Only a little	Quite a lot
	Possess special powers	2-4 times	Somewhat true	Only a little	Quite a lot
	Seen something others didn't	5 or more times	Somewhat true	Only a little	Quite a lot
5	Sent special messages through the TV	Only once	Somewhat true	Only a little	Only a little
	Under the control of a special power	2-4 times	Somewhat true	Only a little	Only a little
	Able to read thoughts	2-4 times	Somewhat true	Only a little	Not at all
6	Been followed/spied on	5 or more times	Certainly true	Quite a lot	A great deal
	Heard voices	Only once	Certainly true	Only a little	Only a little
	Under the control of a special power	2-4 times	Somewhat true	Only a little	Only a little
	Possess special powers	2-4 times	Certainly true	Only a little	Only a little
	See something others didn't	Only once	Somewhat true	Only a little	Only a little
7	Heard voices	2-4 times	Certainly true	Only a little	Quite a lot
	Possess special powers	2-4 times	Certainly true	Only a little	Quite a lot
	Seen something others didn't	2-4 times	Certainly true	Only a little	Quite a lot

PLE-ED	PLE	Frequency in past 2 weeks	Conviction	Distress	Impact
8	Heard voices	2-4 times	Certainly true	A great deal	Quite a lot
	Possess special powers	5 or more times	Certainly true	A great deal	Quite a lot
	Seen something others didn't	5 or more times	Certainly true	Only a little	A great deal
9	Able to read thoughts	Only once	Somewhat true	Not at all	Quite a lot
	Possess special powers	2-4 times	Somewhat true	Not at all	Not at all
10	Being followed or spied on	Not at all*	Somewhat true	Only a little	Only a little
11	Seen something others didn't	5 or more times	Somewhat true	A great deal	Not at all
12	Being followed or spied on	Only once	Somewhat true	Quite a lot	Quite a lot
	Heard voices	2-4 times	Somewhat true	Quite a lot	Only a little
	Seen something others didn't	2-4 times	Certainly true	Quite a lot	A great deal
13	Sent special messages through the TV	2-4 times	Somewhat true	Only a little	Not at all
	Being followed or spied on	2-4 times	Certainly true	Only a little	Not at all
	Heard voices	Only once	Somewhat true	Only a little	Not at all
	Seen something others didn't	Only once	Somewhat true	Only a little	Not at all
14	Been followed or spied on	Only once	Certainly true	Quite a lot	Quite a lot
	Heard voices	-	Somewhat true	-	-
	Able to read others thoughts	2-4 times	Certainly true	Not at all	Not at all
	See something others didn't	2-4 times	Certainly true	Quite a lot	Quite a lot

\* Parent reported frequency of this PLE to be 5 or more times in the preceding fortnight, in addition to other PLEs. Child and included in PLE-ED group here.

**Figure 3.2 PLE-ED Self report of PLEs in 2 weeks prior to assessment**



CC	PLE	Frequency in past 2 weeks	Conviction	Distress	Impact
1	Able to read thoughts	Only once	Somewhat true	Not at all	Not at all
2	None				
3	None				
4	None				
5	Heard voices	5 or more times	Somewhat true	Not at all	Only a little
	Able to read thoughts	Only once	Somewhat true	Not at all	-
6	Heard voices	Only once	Somewhat true	Only a little	Not at all
	Seen something others didn't	Only once	Somewhat true	Only a little	Not at all
7	None				
8	None				
9	Thoughts read by others	Only once	Somewhat true	Not at all	Not at all
10	None				
11	Been followed or spied on	Only once	Somewhat true	Not at all	Not at all
12	Been followed or spied on	Only once	Somewhat true	Only a little	Quite a lot
13	None				
14	None				
15	Sent special messages through the TV	5 or more times	Certainly true	Not at all	Not at all
	Possess special powers	5 or more times	Certainly true	Not at all	Not at all

**Figure 3.3 CC Self report of PLEs in 2 weeks prior to assessment**

Figure 3.3 shows the PLEs reported by young people in the CC group. These young people reported fewer PLEs (range 0-2), but with a range of persecutory ideation, ideas of reference and hallucinations reported.

Overall, 72.4% of young people assessed here reported at least one PLE in the two weeks prior to assessment and 48.3% reported two or more PLEs. Only 33.3 % of young people reporting PLEs attributed distress (a great deal or quite a lot) to them.

### 3.2 Relationship between PLEs and other factors

#### **Hypothesis 1.**

- 1a) The frequency & severity of PLEs in referred children will be associated with increased levels of depression and anxiety.
- 1b) Parental report of children's PLEs will be lower than self report

#### **Hypothesis 2.**

The frequency and severity of PLEs will be associated with:

- 2a) higher rates of bullying
- 2b) higher rates of loneliness and lower rates of perceived social support
- 2c) higher levels of negative life events

#### **Hypothesis 3.**

The frequency and severity of PLEs will be associated with:

- 3a) A probabilistic reasoning bias
- 3b) more negatively biased schema of self and others
- 3c) higher rates of rumination
- 3d) poorer meta-cognitive awareness

#### 3.2.1 Correlations between PLEs and clinical, social and environmental, cognitive and neuropsychological measures

Data from the whole sample, collapsed across group membership, was subject to correlational analyses of relationships between PLES reported in the two weeks prior to assessment and clinical, social and environmental, cognitive and neuropsychological measures (see Table 3.3).

Analysis of these correlations revealed significant associations between the total PLE score and emotion (MFQ, Spence), social and environmental variables (bullying, loneliness and negative life events) and cognitive variables (positive and negative schematic beliefs about others, CRSQ). Each of these associations reflected higher PLE scores with increased symptom or adversity. Higher levels of PLEs were associated with higher levels of depression and anxiety, more loneliness, bullying and negative life events, and higher levels of rumination. PLEs were also associated with fewer positive and more negative schematic beliefs about others and higher levels of negative schematic beliefs about the self.

		MFQ	Spence total	Bullying	Loneliness	Social Support	Life Events
Total	<i>r</i>	<b>.485</b>	<b>.559</b>	<b>.577</b>	<b>.594</b>	-.109	<b>.361</b>
PLE	<i>p</i>	<b>.008</b>	<b>** .002</b>	<b>** .001</b>	<b>** .001</b>	.573	<b>.054</b>
	<i>N</i>	29	29	29	29	29	29
		BCSS Positive Self	BCSS Negative Self	BCSS Positive Others	BCSS Negative Others	CRSQ	
Total	<i>r</i>	-.271	.300	<b>-.372</b>	<b>.672</b>	<b>.567</b>	
PLE	<i>p</i>	.155	.114	<b>.047</b>	<b>** .000</b>	<b>** .002</b>	
	<i>N</i>	29	29	29	28	29	
		BPVS Raw	JTC bias 85:15*	JTC bias 60:40*	SRIS Insight	SRIS Reflection	
Total	<i>r</i>	-.131	<b>.498</b>	.307	-.151	.168	
PLE	<i>p</i>	.497	<b>.010</b>	.128	.453	.401	
	<i>N</i>	29	26	26	27	27	

**Table 3.3 Correlations between self-reported PLEs and self-reported clinical, social and environmental, cognitive and neuropsychological variables.**

Significant associations indicated by bold text. \*Point Biserial correlation

\*\* remain significant after a bonferroni correction to significant level of .003.

The same analysis was conducted on PLEs reported in the year prior to assessment. The results of this analysis did not reveal any significant differences in relationship between PLEs in the preceding year compared to PLEs in the preceding two weeks (see Appendix 6).

### 3.2.2. Independence and Predictive Utility of factors associated with PLEs

Variables which were significantly correlated with PLEs were entered into a multiple regression, using backward selection, in order to assess their predictive value and the independence of associations.

The study is clearly underpowered to provide a reliable regression model of all variables, however the statistics from the first step of the model with all variables entered, indicate that the only factor which has a concerning level of multicollinearity is CRSQ (see Appendix 7). This variable was removed at step two and so its inclusion does not have an impact on the final regression model.

Two variables, MFQ and JTC bias remained in the final model (step 1  $R^2=.719$ ,  $p = .015$ ; step 9  $R^2=.625$ , adjusted  $R^2=.591$ ,  $p < .001$ . See Table 3.4).

	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Constant	-2.056	2.632		.443
JTC Bias	8.179	3.257	.331	.020
MFQ	1.341	0.261	.676	<.001

**Table 3.4 Regression analysis of factors predictive of PLEs.**

In summary, analysis of the relationship between PLEs and other factors revealed significant associations between PLEs and emotional, social and cognitive factors. In a regression analysis it was demonstrated that these effects are relatively independent, with the exception of rumination, and that the JTC bias and depression, as indexed by MFQ, are predictive of PLEs in this sample. This final result is interpreted with caution as the regression analysis is exploratory and underpowered.

### 3.2.3 Correlations between PLEs and self reported SDQ components

No directional hypotheses were made about the relationship between PLEs and the components of the SDQ.

Examination of the associations between PLEs and SDQ components (see Table 3.5) reveals significant associations between PLEs and emotional distress and peer difficulty components of the SDQ, in the absence of associations with conduct and hyperactivity difficulties. Although there was no significant difference found between the two groups on the initial reason for referral, the significant association between emotions and PLEs, in the absence of a significant relationship between conduct or hyperactivity and PLEs mirrors the data presented in Table 3.2 which summarised the reasons for referral for the young people who later reported distressing PLEs.

	SDQ emotional	SDQ conduct	SDQ hyper- activity	SDQ peer problems	SDQ prosocial	SDQ total difficulties	SDQ impact
N	29	29	29	29	29	29	29
Total <i>r</i>	<b>.669</b>	.238	.322	<b>.536</b>	.015	<b>.589</b>	<b>.435</b>
PLE <i>p</i>	<b>.000</b>	.215	.088	<b>.003</b>	.940	<b>.001</b>	<b>.018</b>

**Table 3.5 Correlations between self-reported PLEs and self-reported SDQ components.**

Significant associations indicated by bold text.

### 3.3 Comparison of PLE-ED and CC groups

#### 3.3.1 Clinical measures

##### Hypothesis 1.

1c) Higher levels anxiety and depression related symptoms will be reported by the PLE-ED group

##### 3.3.1.1. Self reported clinical measures

A series of one way ANOVAs were performed on the clinical measures data (see Table 3.6). Significant effects of group were revealed for SDQ (self report) peer difficulties, total difficulties and impact each reflecting ratings of greater difficulties in the PLE-ED group. A significant effect of group was also revealed in the SDQ (self report) emotional difficulties, reflecting higher scores in the PLE-ED group. Whilst the groups were defined in part on this measure (PLE plus distress indexed by self report SDQ emotional difficulties) this does not preclude high levels of emotional difficulty in the CC group, in the absence of PLEs.

Significant effects of group were revealed in MFQ scores, reflecting higher levels of depressive symptoms in the PLE-ED group. Similarly, significant effects of group were revealed in Spence total, Generalised Anxiety (GAD) and Social Phobia scores, reflecting higher levels of anxiety symptoms in these domains in the PLE-ED group.

	CC	PLE-ED	<i>F</i>	d.f.	<i>p</i>	$\eta_p^2$
SDQ self report	Mean (s.d.) % clinical	Mean (s.d.) % clinical				
Emotion	4.33 (1.18) 20%	7.00 (1.18) 100%	37.24	1, 27	<.001	.58
Conduct	2.73 (1.79) 40%	3.07 (1.77) 35.72%	0.26	1, 27	.614	.01
Hyperactivity	3.87 (2.39) 20%	5.43 (2.31) 57.14%	3.20	1, 27	.085	.11
Peer problems	1.93 (1.28) 13.3%	3.50 (1.83) 42.85%	7.22	1, 27	.012	.21
Pro-social	8.07 (1.33) 6.66%	7.93 (1.73) 14.29%	.06	1, 27	.811	.00
Total	12.87 (4.79) 33.33%	19.00 (4.22) 85.71%	13.28	1, 27	.001	.33
Impact	3.40 (2.84) 73.33%	6.79 (3.62) 92.85%	7.89	1, 27	.009	.23
Spence self report						
Total	23.53 (12.54) 13.335%	39.64 (17.78) 50%	8.04	1, 27	.009	.23
GAD	4.80 (2.57) 6.66%	8.79 (3.56) 57.14	12.10	1, 27	.002	.31

OCD	5.07 (3.33) 13.33%	6.93 (3.97) 35.71%	1.83	1, 27	.181	.07
Panic	3.20 (3.67) 13.33%	6.14 (4.90) 50%	3.39	1, 27	.077	.11
Separation Anx.	4.27 (2.79) 33.33%	6.29 (3.67) 42.86%	2.81	1, 27	.105	.09
Social Phobia	3.87 (2.20) 6.66%	6.79 (2.75) 21.43%	10.03	1, 27	.004	.27
MFQ self report						
Total	5.13 (4.27) 20%	10.79 (5.83) 64.29%	8.95	1, 27	.006	.25

**Table 3.6 One way ANOVAs of self report clinical measures**

**% above clinical cut off using published cut offs for SDQ and MFQ, and t scores above 60 for Spence domains.**

Table 3.6 also shows the percentage of each group that score within the borderline or clinical range for each of these measures.

Finally, a series of one way ANOVAs were performed on self report PLE data (see Table 3.7). Significant group effects were revealed on each of the four components of the self report PLE measures, confirming that the PLE-ED group had higher frequency PLEs and that these were experienced with a greater level of conviction (PLE criteria being that a PLE was reported in the two weeks prior to assessment). These group effects also revealed greater PLE related distress and perceived impact in the PLE-ED group.

PLE Self report	CC	PLE-ED	<i>F</i>	d.f.	<i>p</i>	$\eta_p^2$
Conviction	1.33 (1.23)	6.00 (3.46)	24.01	1, 27	<.001	.47
Frequency	1.07 (1.75)	6.57 (4.73)	17.72	1, 27	<.001	.40
Distress	.33 (.82)	4.43 (2.28)	42.71	1, 27	<.001	.61
Impact	.33 (.62)	4.21 (3.56)	17.35	1, 27	<.001	.39

**Table 3.7 One way ANOVAS of self reported PLEs**

### 3.3.1.2 Parent reported clinical measures

A further set of one way ANOVAs were performed on the clinical measures completed by parents (see Table 3.8). In contrast to the self reported difficulties, a significant effect of group was revealed in SDQ parent reported difficulties only for emotional difficulties. This reflected greater emotional difficulties in the PLE-ED group.

Similarly, a significant effect of group was revealed in the Spence GAD domain, again reflecting greater difficulties in the PLE-ED group. However, significant effects of group were not revealed in other Spence domains, or in the total Spence scores. Neither was a significant effect of group revealed in parent reported MFQ data.

Table 3.8 also shows the percentage of each group that score within the borderline or clinical range for each of these measures.

	CC	PLE-ED	<i>F</i>	d.f.	<i>p</i>	$\eta_p^2$
SDQ parent report	Mean (s.d.) % clinical	Mean (s.d.) % clinical				
Emotion	4.27 (2.99) 53.33%	6.57 (2.21) 92.86%	5.51	1, 27	.026	.17
Conduct	3.69 (2.67) 66.67%	2.71 (1.44) 57.14%	1.21	1, 27	.280	.04
Hyperact.	5.93 (3.15) 53.33%	6.57 (3.03) 64.29%	0.31	1, 27	.583	.01
Peer probs.	2.27 (2.15) 40%	3.93 (2.43) 64.29%	3.81	1, 27	.062	.12
Prosocial	6.33 (3.20) 26.67%	8.07 (1.82) 7.14%	3.17	1, 27	.086	.10
Total	16.07 (8.79) 53.33%	19.79 (6.49) 71.42%	1.66	1, 27	.209	.06
Impact	6.13 (3.23) 93.33%	8.14 (4.38) 92.85%	1.20	1, 27	.169	.07
Spence parent report						
Total	21.93 (15.47)	28.57 (14.84)	1.39	1, 27	.249	.05
GAD	3.87 (2.88)	6.29 (3.43)	4.26	1, 27	.049	.14
OCD	3.20 (2.65)	2.28 (2.33)	0.97	1, 27	.335	.04
Panic	1.67 (2.69)	3.00 (3.21)	1.48	1, 27	.235	.05
Separ. Anx.	4.53 (3.76)	5.36 (94.89)	0.26	1, 27	.614	.01
Social Pho.	4.87 (3.78)	6.00 (2.88)	0.82	1, 27	.374	.03
MFQ parent report						
Total	6.40 (6.59)	9.50 (5.50)	1.88	1, 27	.182	.07

**Table 3.8 One way ANOVAs of parent report clinical measures**

% above clinical cut off using published cut offs for SDQ. Cut offs for MFQ parent scores and T scores for Spence parent scores have not been published.

In contrast to the self report data, but as hypothesised, no significant group effects were revealed in parental reports of young people's PLEs, suggesting that parents did not tend to be aware of these experiences.

PLE parent report	CC	PLE-ED	<i>F</i>	d.f.	<i>p</i>	$\eta_p^2$
Conviction	.733 (1.58)	1.15 (2.41)	0.31	1, 26	.585	.01
Frequency	.60 (1.68)	.92 (2.14)	0.20	1, 26	.658	.01
Distress	.73 (1.62)	1.23 (2.62)	0.38	1, 26	.545	.01
Impact	.67 (1.40)	1.08 (2.75)	0.26	1, 26	.616	.01

**Table 3.9 One way ANOVAS parent reported PLEs**

	Number of impaired domains			
	0	1	2	3+
CC Self report	6	5	2	2
PLE-ED Self report	0	3	5	6
CC Parent report	2	3	4	6
PLE-ED Parent report	0	3	2	8

**Table 3.10 Number of participants with impairments in SDQ domains**

Data presented in Table 3.10 shows the number of impaired domains reported by each individual. This data is suggestive of a range of clinical need in each group, as reflected by the number of impaired domains reported by parents and young people. There is not enough data at this stage to formally analyse whether the PLE-ED group have a tendency to report a greater number of areas of clinical need.

### 3.3.2 Social and Environmental Measures

#### Hypothesis 2.

The PLE-ED group will present with:

2d) higher rates of bullying

2e) higher rates of loneliness and lower rates of perceived social support

2f) higher levels of negative life events

A series of one way ANOVAs were performed on data from the social and environmental measures (see Table 3.11). These revealed a significant effect of group on loneliness and bullying, reflecting higher levels of each in the PLE-ED group. Effects of group were not significant in life events or reported social support.

	CC	PLE-ED	<i>F</i>	d.f.	<i>p</i>	$\eta_p^2$
Life Events						
LEI	1.45 (1.55)	1.93 (1.59)	0.63	1, 27	.436	.02
Peer relations						
Loneliness	1.87 (1.73)	5.29 (2.33)	20.30	1, 27	<.001	.43
Bullying	1.93 (2.63)	4.64 (3.84)	4.98	1, 27	.034	.16
Social Support	18.33 (9.26)	17.07 (8.99)	0.14	1, 27	.713	.01

**Table 3.101 One way ANOVAs of social and environmental measures**



## 3.5.3 Cognitive Measures

**Hypothesis 3**

The PLE-ED group will present with:  
 3e) a greater likelihood of JTC bias  
 3f) more negatively biased schema of self and others  
 3g) higher rates of rumination  
 3h) poorer meta-cognitive awareness  
 3i) poorer social problem solving skills.

The proportion of each group who displayed a JTC bias was calculated (see Table 3.12). This data was subject to Chi Squared analyses which revealed significant difference in the distribution of the data between groups in the 85:15 condition ( $\chi^2 (1) = 9.905, p = .002$ ) but not in the 60:40 condition ( $\chi^2 (1) = 1.704, p = .330$ ). This reflects a larger proportion of the PLE-ED group than the CC group demonstrating a JTC bias in the 18:15 condition.

		JTC Bias	No JTC bias
85:15	PLE-ED	8	6
	CC	0	12
60:40	PLE/ED	4	10
	CC	1	11

**Table 3.112 Distribution of JTC bias within groups and condition**

Data from the BCSS, CRSQ and SRIS were subjected to a series of one way ANOVAs (see Table 3.13). These revealed significant effects of group on negative self, positive others and negative other components of the BCSS. These reflected more negative schemas of self and others as well as less positive schemas of others in the PLE-ED group.

A significant effect of group was revealed in the CRSQ data, reflecting higher levels of ruminative responses in the PLE-ED group.

No significant effects of group were revealed in the SRIS, suggesting that groups did not differ significantly in their self-reported levels of insight or reflection.

	CC	PLE-ED	<i>F</i>	d.f.	<i>p</i>	$\eta_p^2$
<b>BCSS</b>						
Positive self	17.07 (4.59)	14.64 (5.75)	1.59	1, 27	.219	.05
Negative self	0.93 (1.53)	3.00 (3.64)	4.08	1, 27	.054	.13
Positive others	15.80 (4.72)	11.57 (6.60)	3.98	1, 27	.056	.13
Negative others	3.671 (4.58)	9.57 (6.74)	6.68	1, 27	.015	.20
<b>CRSQ</b>						
Total	17.07 (7.83)	30.14 (11.10)	12.96	1, 26	.001	.33
<b>SRIS</b>						
Insight	18.23 (4.44)	19.86 (4.67)	0.86	1, 25	.363	.03
Reflection	30.54 (11.12)	28.36 (5.30)	0.43	1, 25	.516	.02

**Table 3.123 One way ANOVAs of cognitive measures**

Data from the SPST was processed following Joffe et al. (1990). The total number of each category of possible social response, personally preferred social response and the potential personal outcomes were summed across stories and subjected to a series of one way ANOVAs (see Table 3.14). This did not reveal any significant effects of group. The group effect on number of directly assertive responses given was suggestive of an effect of group, and is of an effect size that this study has limited power to detect. This group effect was in the opposite direction to that hypothesised; the PLE-ED group generated more directly assertive possible responses than did the CC group.

	CC	PLE-ED	F	d.f.	p	$\eta_p^2$
<b>Possible Social Responses</b>						
Relevant means	7.29 (1.63)	9.23 (3.76)	3.11	1, 25	.090	.11
Irrelevant means	0.00 (0.00)	0.23 (0.60)	2.08	1, 25	.161	.08
Directly assertive	2.71 (1.20)	4.00 (2.12)	3.83	1, 25	.062	.13
Indirectly assertive	3.07 (1.21)	2.92 (2.25)	0.05	1, 25	.831	.00
Passive	1.00 (1.18)	1.15 (0.99)	0.13	1, 25	.717	.00
Aggressive	0.43 (1.09)	0.46 (0.66)	0.01	1, 25	.926	.00
Passive Aggressive	0.07 (0.27)	0.33 (0.89)	1.11	1, 25	.303	.04
<b>Personal Social Responses</b>						
Directly assertive	1.43 (0.76)	1.54 (0.88)	0.12	1, 25	.730	.01
Indirectly assertive	1.21 (0.70)	0.62 (0.65)	5.29	1, 25	.030	.18
Passive	0.29 (0.47)	0.46 (0.87)	0.43	1, 25	.518	.02
Aggressive	0.71 (0.27)	0.15 (0.38)	0.44	1, 25	.515	.02
Passive Aggressive	0.00 (0.00)	0.15 (0.55)	1.08	1, 25	.309	.04
<b>Personal Outcomes</b>						
Positive outcome	3.78 (1.25)	4.69 (1.60)	2.71	1, 25	.112	.10
Negative outcome	2.79 (1.58)	3.69 (2.10)	1.62	1, 25	.214	.06
Total barriers	2.21 (1.63)	2.07 (1.61)	0.05	1, 25	.827	.00

**Table 3.134 One way ANOVAs of SPST**

In summary, the results from the SPST do not indicate that the PLE-ED group were less able than the CC group to solve hypothetical social problems. They generated a marginally higher number of directly assertive possible social responses to difficulties, while a significantly higher number of their personally preferred solutions were indirectly assertive.

## 3.3.4 Neuropsychological Measures

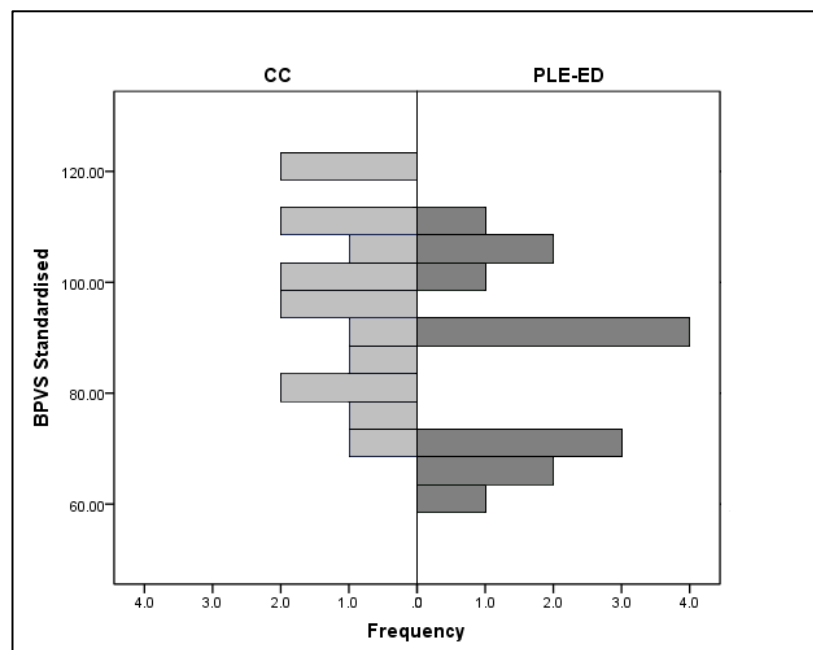
**Hypothesis 4**

The PLE-ED group will have:

4a) Lower verbal ability

4b) Poorer verbal learning ability

A one way ANOVA did not reveal a significant effect of group on raw BPVS scores (see Table 3.14). Given the range of age in this sample the ANOVA was repeated on standardised scores. This revealed a trend of difference between the groups, with the PLE-ED group having lower scores. The results of this analysis suggest that the PLE-ED group have lower verbal ability than would be expected for their age. Moreover, analysis of the distribution of scores in the PLE-ED group is indicative of a bi-modal distribution (see Figure 3.4). From previous research, outlined in Chapter 1 (see Section 1.4.1) it might be expected that there would be a relationship between PLEs, distress and verbal ability, that would vary between these high and low verbal ability groups. Given the small size of these groups ( $n = 6$  and  $8$ ) in the research presented here it is not possible to identify whether there are clear relationships between verbal ability and clinical factors. However, the potential implications of this distribution will be discussed in Chapter 4.



**Figure 3.4 Histogram of BPVS standardised scores for PLE-ED and CC groups**

A series of one way ANOVAs was performed on each of the components of the RAVLT (see Table 3.15). A significant effect of group was revealed in Delayed Recall ability, reflecting lower recall scores in the PLE-ED group. However, given the indication

reported above that the PLE-ED group had reduced verbal ability this analysis was repeated co-varying standardised BPVS scores. When subject to this ANCOVA the effect of group on delayed recall was no longer significant ( $F(1, 25) = 2.58, p = .12, \eta_p^2 = .09$ ).

	CC	PLE-ED	<i>F</i>	d.f.	<i>p</i>	$\eta_p^2$
<b>BPVS</b>						
Raw	98.27 (17.87)	93.35 (17.77)	0.55	1, 27	.465	.02
Standardised	96.60 (16.39)	85.07 (17.62)	0.33	1, 27	.079	.11
<b>RAVLT</b>						
Trial 1	5.53 (1.55)	6.36 (1.69)	1.87	1, 27	.183	.07
List b	5.27 (1.71)	5.86 (2.18)	0.66	1, 27	.422	.02
Trial 6	9.27 (3.77)	8.07 (3.50)	0.78	1, 27	.385	.03
Delayed recall	9.27 (3.73)	7.07 (3.77)	5.16	1, 26	.032	.17
Recognition	13.79 (1.48)	13.07 (2.92)	0.67	1, 26	.422	.03
Total Learning	45.80 (10.80)	43.71 (12.18)	0.24	1, 27	.629	.01

**Table 3.145 One way ANOVAs of neuropsychological measures**

### 3.4 Summary of results

#### 3.4.1 Clinical results

The results confirm the suggestion that PLEs are reported by a large proportion of young people, both in the presence and absence of concurrent emotional distress. 72.4% of participants reported at least one PLE in the two weeks prior to assessment. This is consistent with previous research in community samples (see Table 1.1). It also replicates findings presented previously (Laurens et al., 2007; Kelleher 2011) that young people's parents tend not to be aware of these experiences, and this is further reflected in the finding here that only one participant was specifically referred because of PLE related concerns.

As hypothesised, both the group comparison and the correlational analysis indicated that PLEs in young people are associated with emotional distress, depression and anxiety (particularly GAD and social anxiety) rather than externalising problems such as conduct or hyperactivity related difficulties. However, only a small proportion of participants directly attributed distress to the PLEs when assessed here.

#### 3.4.2 Social and Environmental results

It was hypothesised that PLEs would be associated with higher rates of bullying, loneliness and traumatic life events in referred children and that PLEs in these children will be associated with lower rates of perceived social support. The results supported the first two of these hypotheses with both analyses indicating that PLEs were associated with the social stressors bullying and loneliness. The correlational analysis indicated that negative life

events were also associated with PLEs, though this finding was not reflected in the group comparison. The data did not support the hypothesis that PLEs would be associated with lower perceived social support.

#### 3.4.3 Cognitive results

It was hypothesised that PLEs in these children would be associated with a greater likelihood of JTC bias, more negatively biased schema of self and others, higher rates of rumination and poorer social problem solving skills. The results support each of these apart from the final one; data collected here was not indicative of social problem solving skills deficits.

#### 3.4.4. Neuropsychological results

Finally, it was hypothesised that children reporting PLEs would have poorer verbal ability and poorer verbal learning scores than children who do not report PLEs. The analyses of neuropsychological data were suggestive of reduced verbal ability in the PLE-ED group, and importantly this data was bi-modally distributed. This study does not have the power to further investigate the implications of this distribution. Delayed verbal recall was impairment in the PLE-ED group, though as will be discussed below this may be related to verbal ability.

## 4. Discussion

The research presented here sought to characterise the psychological processes associated with the presence and severity of PLEs in a group of referred children. This is the first examination of PLEs and putatively associated psychological processes in a group of referred children of this age. Results presented in Chapter 3 support the hypotheses (see Section 1.10) that PLEs would be associated with emotional, social, cognitive and neuropsychological factors. The results presented did not provide support for the hypotheses that children with PLEs and concurrent distress would present with social problem solving skills, and only limited support for the hypothesis that they would have impairments of verbal ability and verbal memory.

The key findings of this research will be briefly summarised before a more detailed explanation of the current findings and consideration of limitations, relation to existing literature, clinical implications and suggestions for future research.

### 4.1 Key findings

#### 4.1.1. Clinical and Emotional

The prevalence of PLEs in this sample is consistent with that of community samples drawn both from the same geographical area (Laurens et al., 2007, 2011a,b) and others (see Table 1.1) using self report measures. Also consistent with previous research is the marked discrepancy between parent and children reports of these experiences.

This research has demonstrated an association with PLEs and symptoms of depression and anxiety which are consistent with research in community and birth cohort studies (Armando et al., 2010; Barragan et al., 2011; Polanczyk et al., 2010) and extend these findings into a referred younger cohort.

Moreover, the results of the research reported here also extend previous reports of the relationship between depression and PLEs. Depression, together with reasoning, was seen here to be predictive of PLEs across this whole sample of referred children.

#### 4.1.2 Social and Environmental

This research has highlighted the importance of interpersonal factors in the presentation of PLEs in children, particularly loneliness and bullying. These findings are consistent with, and extend past research (e.g. Arseneault et al, 2008, 2010; Schreier et al., 2009). The interactions between these interpersonal factors and anxiety and schema

development as well as PLEs may particularly warrant future research and will be further discussed below.

In contrast with previous research life events, while associated with PLEs across the whole sample, did not differ significantly between PLE-ED and CC groups. Putative explanations for this will also be further discussed below.

#### 4.1.3 Cognitive

This research extends previous research by presenting the first evidence that the JTC bias is present in the same proportion of young people with PLEs as has been reported in adult samples (Freeman, 2007). Further, it provides the first evidence that PLEs are associated with negative schematic beliefs about others in children. Finally, this research has demonstrated a clear relationship between rumination and PLEs in children.

#### 4.1.4 Neuropsychological

The neuropsychological research presented here is suggestive of a verbal impairment. However, it is not clear whether the reduced verbal memory reported is driven primarily by children who had impaired verbal ability, or whether it is fully accounted for by the verbal ability of the sample. The data is suggestive of a bimodal distribution in the verbal ability of the young people with PLEs and concurrent distress, which would make a subset of our sample comparable to the young people identified by Laurens et al. (2011) as being vulnerable to later psychosis through a putative triad of antecedents. However, this research is not able to further explore this possibility.

### 4.2 Summary of research

#### 4.3.1 Clinical and Emotional

##### 4.3.1.1. *Depression and Anxiety*

Depression and anxiety were demonstrated to be associated with PLEs, and to be elevated in children who report both distress and PLEs. Although the PLE-ED group was selected on the basis of a self-reported PLE and self-reported distress on the SDQ, this did not preclude high levels of distress and mood related symptoms in the CC group, in the absence of PLEs.

Therefore, this close association may reflect a clinically and scientifically interesting relationship between mood, anxiety and PLEs in childhood. However, an alternative is that it reflects the high prevalence of PLEs in childhood, and that the PLE-ED group has captured distress that is coincidental to a normative experience. Indeed, the majority of children screened for this research reported experiencing at least one PLE in the weeks preceding the assessment.

However, the predictive value of depression, alongside reasoning, in this research is indicative of a more meaningful relationship between PLEs and mood, as is the particular relationship between anxiety and PLEs. The higher level of anxiety symptoms in the PLE-ED group was particularly clear in those symptoms related to social phobia and GAD. Although SCAS is a screening measure rather than a diagnostic tool, this finding highlights the particular elements of anxiety that are related to PLEs in this sample. First, items aggregated into the GAD scale tap symptoms that could be referred to as general anxiety rather than cognitive processes associated with Generalised Anxiety Disorder (such as meta cognitive worry processes; Behar, DiMarco, Hekler, Mohlman & Staples, 2009). These general symptoms of anxiety include both physical symptoms and a sense of fear or vulnerability. The social phobia items tap both performance anxieties and social-evaluative fears. It has been suggested that anxiety plays a particular role in the development and maintenance of psychotic experiences in engendering a search for meaning and through associated cognitive and behavioural processes such as safety seeking behaviours and avoidance (Freeman, Garety & Phillips, 2000; Freeman & Garety, 2003).

The current data does not allow for evaluation of the direction of association between PLEs and anxiety and social phobia, however it is plausible that the relationships described by Freeman and Garety may also be involved in the maintenance, and possible distress associated with the PLEs reported here. For example, a young person who has a sense of being followed is more likely to attend to this if they have a belief that something bad might happen to them, and attending to this experience will strengthen the threat related belief. Similarly, the young person who has an experience of thought broadcast or mindreading may be more concerned by this if they concurrent concerns about the social-evaluative judgements that others make of them, and these concerns are likely to be exacerbated by believing that their own negative beliefs about themselves have been read from the mind of another. A sense of vulnerability and social evaluation is likely to be particularly marked in adolescence with the development of greater autonomy and independence alongside the growing importance of the peer group for identity and self-worth, and it is likely that the associations between these components of anxiety and PLEs revealed here in pre-adolescents would be more marked during adolescence.

A further indication that the current research has captured effects that are not purely coincidental to normative experience is that variation in features of PLEs between the two groups. The PLE-ED group reported significantly higher levels of conviction, frequency of experience, distress and impact. These findings were not an inevitable outcome of the group selection process. One criterion for allocation to the PLE-ED group was at least one PLE reported in the previous week. Similarly, membership of the CC group was not precluded by high frequencies of PLEs, or reports of high levels of impact or conviction, so long as there



was not a high level of concurrent SDQ measured distress. These findings suggest that although PLEs may be a normal experience, there may be a threshold above which the quality of the experience becomes less easily challenged, less manageable, more distressing and more frequent and these features may indicate a need for support.

#### *4.1.1.2 Clinical Presentation*

Hypotheses were not made about the relationship between PLEs and the components of the SDQ, as this is the first examination of PLEs in a referred group of 8-14 year olds and it was not known what primary difficulties they would tend to present with. Indeed, analysis of the presenting concerns did not reveal a significant difference between PLE-ED and CC groups; indicating that they presented with both internalising and externalising concerns. This is consistent with previous research that has described associations between PLEs and increased risk of both internalising (Nishida et al., 2009) and externalising difficulties (e.g. Kinoshita et al., 2011). However, an alternative explanation would be that this research was underpowered to detect differences in the data. Indeed, there is good evidence that PLEs were associated with emotional distress (see section 4.3.1.1.) and in a larger sample this might be evident at referral.

Alternatively, group selection here may have privileged an internalising path to or response to PLEs. PLEs were not associated with higher levels of conduct or attention/hyperactivity difficulties, neither did the PLE-ED and CC groups differ on these components of the SDQ as might be expected if all young people with conduct or attention/hyperactivity difficulties were allocated to the CC group.

Examination of both the relationships between PLEs and SDQ components in the whole sample and analysis of group differences indicated those reporting PLEs reported a higher level of difficulty with a greater impact overall. Higher levels of distress and impairment are indicative of a need for care for these young people. The analyses also revealed an elevated level of difficulty with peer relationships in young people who report PLEs. This is consistent with and extends previous reports of social adjustment and peer interaction difficulties in high risk groups (de la Serna et al., 2010; Owens & Johnstone et al., 2006). Together with associations with social phobia, and social factors discussed below (section 4.1.2) this highlights the interpersonal influences on and consequences of these experiences in children.

There were also discrepancies between self and parent reported symptoms of clinical difficulties. It is consistent with previous reports (Laurens et al., 2007; Kellher et al., 2011) that parents of young people allocated to the PLE-ED group did not report greater levels of PLEs in their children than parent in the CC group. The results indicate that neither group of parents was aware that their children were having these experiences, and that the PLE-ED

group were not more aware than the CC group as might be expected given the greater frequency and conviction with which their children had them.

Similarly, parent reported levels of depression or anxiety related symptoms did not differ between groups to the same extent as the self reported levels of these symptoms did. This is consistent with past research has indicated that while parent and child self reports tend to be significantly correlated, these correlations tend to be weak, particularly for internalising disorders (Achenbach, McConaughy & Howell, 1987).

In summary, PLEs were seen to be common in this group of referred young people. However, there are associations between the frequency and severity of PLEs and symptoms of both mood and anxiety. More specifically, young people with concurrent PLEs and distress reported higher levels of symptoms associated with anxiety and social phobia, and mood was seen to be predictive of PLEs.

#### 4.1.2. Social and environmental

##### 4.1.2.1 *Bullying and loneliness*

This research has extended past research (Arsenault et al., 2011) and demonstrated associations between PLEs and higher levels of bullying and loneliness. This relationship is apparent across the whole sample, and reports of these experiences are further elevated in the PLE-ED group.

The experiences of bullying and loneliness, through their socio-evaluative nature, are likely to trigger a particularly strong stress response (Jones & Fernyhough, 2007). They are also likely to have a role in the development of negative schemas of self and others (see section 1.4.2.3). Experiences of bullying and loneliness are likely to have a bi-directional developmental relationship, which is not captured by the current research (e.g. Schrier et al., 2009, see van Dam et al., 2012, for a review and meta-analysis).

##### 4.1.2.2 *Life Events*

The relationship between negative life events and PLEs is less clear. Analysis of this relationship across the whole sample was suggestive of an elevation in PLEs with a greater number of life events reported, though this effect would not survive a Bonferroni correction for multiple comparisons. However, the two groups did not differ in the number of negative life events reported. At first review this does not appear to be what would be expected given the previous literature which has emphasised the role of life events on the development of psychosis (e.g. Bebbington et al., 2011).

However, events captured in previous research have been of interpersonal negative experiences or severe trauma such as long term abuse or torture. The life events measure used here did not capture these high valence events but was focused more on loss and on

health concerns of self and others. Indeed it may be that the as the bullying measure captured more of this interpersonal adversity than the life events measure, it was more aligned to past research on environmental influences on the development of psychosis.

An alternative explanation is that the life events captured by the Life Events Interview may have less of an impact on the level of PLEs experienced in childhood when having PLEs is more normative. In contrast life events may contribute to their persistence into adulthood and the increasing levels of distress and impairment associated with them.

#### *4.1.2.3. Social support*

The perceived level of social support did not vary between groups and nor is this factor associated with PLEs across the whole sample. This is not consistent with previous research with adults with psychosis which finds associations with social support (Cresswell, Kuipers & Power, 1992; Norman et al., 2005).

This finding suggests that the absence of social support for many adults with psychosis may be a consequence of their mental health difficulties, rather than an aetiological factor. PLEs reported here were both common, and private, and as such are quite different to many people's experience of psychosis which is less common and may be more observable (if not comprehended) to others, and may result in social isolation as a result of many factors including avoidance, anxiety and stigma.

#### *4.1.3 Cognitive*

##### *4.1.3.1. Reasoning and the JTC bias*

This research is the first to examine the JTC bias in children, although it is well established that approximately half to a third of adults with PLEs or psychosis have this reasoning bias (Freeman, 2007). Consistent with this, the current research has revealed that 57% of young people in the PLE-ED group had this reasoning bias. Moreover, reasoning, together with mood, was predictive of a measure of PLEs that incorporated distress and conviction as well as occurrence.

The absence of this bias in the CC group, despite reports of PLEs in this group, and the fact that 43% of the PLE-ED group did not have the bias is consistent with the suggestion that reasoning biases do not explain the occurrence of PLEs but rather it is associated with strength of conviction and other responses to intrusions (Freeman et al., 2008 and Garety et al., 2005).

##### *4.1.3.2. Schema of self and others*

Negative schematic beliefs about others were significantly associated with the severity and frequency of PLEs reported. Beliefs about the self were not associated with the occurrence of PLEs. Analysis of between group differences in these schematic beliefs

revealed that the PLE-ED group had higher levels of negative beliefs about both others and the self and lower levels of positive beliefs about others.

The relationship between schematic beliefs about others, distress and PLEs is consistent both with research with adults and also research with adolescents (Fowler et al., 2006; Campbell & Morrison, 2007).

#### *4.1.3.3. Rumination*

As hypothesised, higher levels of rumination were significantly associated with the severity and frequency of PLEs reported. Moreover, young people in the PLE-ED group reported ruminating over their difficulties to a far greater extent than those in the CC group. This is consistent with previous reports of rumination in adult samples (Badcock, Paulik & Maybery 2011; Halari et al., 2009; Hepworth, Startup & Freeman, 2011) and of the association between emotional coping styles and the persistence of PLEs in adolescence (Lin et al., 2011) and extends these findings to a younger, referred group.

Given the link between mood and psychosis, and between mood and PLEs reported here, it might be hypothesised that the link with rumination is mediated by mood. Indeed, albeit underpowered, the regression reported here would indicate that mood was predictive of PLEs but rumination was not. However, this finding should be interpreted with caution, particularly in terms of rejecting factors that were not predictive. Indeed, Halari et al. (2009) have provided evidence that rumination has a more direct relationship with the negative symptoms of schizophrenia, which is not mediated by the level of depressive symptomatology.

Cognitive processing styles have been theorised to be related to psychosis through the mediation of responses to intrusive thoughts (Garety & Freeman, 1999; Freeman et al., 2011). However, investigation of the relationship between rumination specifically and hallucinations is relatively recent (Halari et al., 2009; Jones & Fernyhough, 2009). The research reported here adds to this literature by demonstrating a strong relationship between PLEs and rumination, and therefore limited support for the model proposed by Jones and Fernyhough (2009). Our results do not provide support for the role of reflection proposed by Jones & Fernyhough (see section 4.1.3.5 below).

#### *4.1.3.4. Social Problem Solving*

The hypothesis that young people in the PLE-ED group had deficits in their social problem solving abilities was not supported by results from the SPST. This is in contrast to early suggestions that these might form a target for intervention (Platt & Spivack, 1972) and more recent research which has identified social cognitive impairment in adolescents who report PLEs (Barragan et al., 2011).

Indeed, the PLE-ED group here tended to generate more directly assertive means to solve social problems, though this effect was not significant, probably because of a lack of power to detect small effect sizes. However, when asked to make a choice of their own preferred method of solving a social problem, they selected significantly fewer indirectly assertive methods. The data do not indicate that this was because they tended to use more directly assertive responses, and it may be that they have a reduced tendency to request support from others as may be developmentally appropriate.

#### *4.1.3.5. Metacognition*

Finally, self reflection and insight, as measured using the SRIS was not associated with severity and frequency of PLEs and neither did the groups differ in their self reported levels of insight or reflection. This measure was used here as previous research with adults has posited a role for metacognitive processes in both psychosis and schizotypy, and indeed it is plausible that people reporting PLEs would have a reduced capacity to reflect on their own mental processes. However, this suggestion is not supported by the research presented here.

#### *4.1.4. Neuropsychological*

##### *4.1.4.1. Verbal ability*

Verbal ability was measured by the BPVS, which provides an index of receptive vocabulary level. Analysis of the scores from the BPVS did not support the hypothesis that participants in the PLE-ED group would have lower verbal ability. However, analysis of the standardised scores allows for comparison of the two groups in terms of how they are performing in relation to their age. This revealed an effect of group which was not statistically significant, but which may reflect a tendency for the PLE-ED group to have lower verbal ability than would be expected for their age. Moreover, examination of the histogram for standardised BPVS scores revealed a distribution which is suggestive of separable groups within the PLE-ED. The current research does not have the power to further investigate this suggestion.

The participants in the PLE-ED group differed from PLE groups in previous research which have been selected on the basis of a triad of impairments, including developmental delay. It is plausible that the young people in the PLE-ED group here who had lower standardised scores may have been incorporated into a PLE group in other research (e.g. Cullen et al., 2010) that require developmental delay for group membership. Certainly, the verbal ability of these participants was consistent with reports of reduced verbal IQ in previous research. The PLE group in the Cullen et al. paper, and by inference the participants in the research presented here with lower verbal ability, may have greater risk of PLE persistence and later mental health difficulties, but this hypothesis requires further research.

#### *4.1.4.2. Verbal memory performance*

Analysis of performance by the two groups on the RAVLT revealed significantly lower delayed verbal recall performance by participants in PLE-ED group than in the CC group. This is consistent with previous research outlined in Chapter 1 (see Section 1.4.1.1) and with recent reports of verbal memory being predicted by PLE group membership in 9-12 year olds (Cullen et al., 2010). However, when verbal ability was controlled for in this analysis there was no longer a significant difference between the two groups in memory performance. One explanation for this is that the difference in delayed recall performance is driven by verbal ability rather than memory per se. Alternatively, any difference in verbal ability may be related to verbal memory ability developmentally. Examination of these alternatives requires further research, however the distribution of verbal ability scores, and the suggestion of impaired delayed recall suggests that in at least a proportion of the PLE-ED group there are neuropsychological impairments related to memory and verbal ability.

In contrast to previous research (e.g. Micluta & Popescu, 2008) the data here did not support suggestions of short term memory impairment or proactive interference problems are implicated in the development of PLEs.

## **4.2 Limitations**

There are a number of clear limitations to this research, which will be noted before clinical implications are discussed and conclusions drawn.

The first is that although the research has been demonstrated to have adequate power to detect effects of large and moderate effects, it has been noted above that there are some factors which it is not currently possible to draw conclusions about because of a lack of power. For example, it is not clear whether there is a difference in primary concern at referral between groups, or how the PLE-ED group differs from the CC group in selection of preferred means of social problem solving. The neuropsychological assessment would benefit from the inclusion of a larger number of participants to facilitate examination of subgroup performance on these tasks. However, arguably, the most important clinically relevant factors have been fully explored with adequate power to have confidence in the outcome of analyses.

The second limitation is that the definition of the PLE-ED group by PLE and SDQ measured emotional distress may have privileged an internalising path to these difficulties. However, this is consistent with existing psychological models of the development and maintenance of the positive symptoms of psychosis, which were considered to be most appropriate for guiding the research. Indeed, when analyses were performed on data of the whole sample, internalising factors continued to be influential, and PLEs were not predicted by conduct or hyperactivity difficulties. Nevertheless, neither did the groups differ in level

of conduct or hyperactivity related difficulties and it may be that there is a subgroup of children who respond to PLEs with a set of more externalising behaviours, and which this research may have overlooked.

Third, the research did not include a non-referred group, so there was no non-clinical control group. This research is novel in that it extends findings previously reported in community and high risk samples, to a clinic sample, and finds results that are consistent. However, it would be of value to directly compare the magnitude of these relationships in referred and non-referred young people with PLEs in order to further delineate the factors that differentiate normative experience from a need for care.

Fourth, no qualitative data was collected on the PLEs reported here. It is not clear what sense the children made of their PLEs, and whether the meaning given to them varied between groups. Although it is likely that children with more negative schema made more persecutory or threat related appraisals of the PLEs, it would be beneficial to confirm this using qualitative methods.

Fifth, the life events measure did not assess for high impact life events such as abuse or severe trauma. These experiences were assessed by the research therapist in children that were in the PLE-ED group when they received therapy, as it was not considered appropriate for the research team to make these inquiries at the time of screening while the children remained on the CAMHS waiting list. At the time of writing it was premature to analyse the PLE-ED group high impact life event data because of the small number of participants that have completed therapy, particularly as this analysis requires comparison to published norms rather than to the CC group.

Finally, significant weight has been put onto self report data in this research. It might be argued that this will result in a response bias whereby some participants are simply more likely to endorse experiences and distress than others. However, it is not the case that participants have endorsed items across all measures and variations are clear. Moreover, there is no evidence of either floor or ceiling effects that would be expected if response bias were a concern. Furthermore, the experiences being inquired into here are largely personal and private, and the inconsistency of parent and self report data clearly indicates the need for individuals to report on their own internal experience. Future research might confirm findings, e.g. of negative schematic beliefs of others, through the deployment of more experimental methods.

### **4.3 Conceptualising Psychotic Like Experiences in Childhood**

This research is the first to report on a referred group of children and examine the contribution of emotional, cognitive, neuropsychological, social and emotional factors to the presentation of PLEs, both with and without concurrent distress. However, it can be placed in the context of a small but growing literature focused on PLEs in childhood and

adolescence which until now has focused on community samples or adolescents. It also bears relation to the large research literature focused on psychosis in adulthood and longitudinal studies of populations deemed to be genetically at higher risk of developing psychosis.

The implications of the research presented here for the conceptualisation of PLEs and in relation to existing theoretical accounts will be explored before a discussion of its implications for clinical practice.

Features of both neurodevelopmental and cognitive models were seen to be associated with PLEs in children in this research. This indicates that to understand the presentation of these features in childhood, to distinguish the factors that determine co-occurrence with distress, and to delineate pathways that are non-normative or that are more likely to be enduring, a broader model may be required.

#### 4.3.1. Neurodevelopmental models of psychosis

A consistent feature of the neurodevelopmental model has been a reduction in IQ (see Section 1.4.1). IQ, as indexed by receptive verbal ability; this was not found to be reduced in all participants. However, there was an indication that a subset of children, in the PLE-ED group may have lower verbal ability than would be expected for their age.

A further consistent feature of the neurodevelopmental model has been an impairment of verbal memory. The current research provides further evidence that impairment in the delayed recall of verbal information is associated with PLEs and concurrent emotional distress. Examination of this data did not suggest a bimodal distribution to mirror that of verbal ability. However, despite the difference between groups being statistically significant, there remains overlap between them which precludes the use of long term verbal memory as a clear marker risk of PLEs and distress. Furthermore, it was not clear from the current data how verbal ability and delayed verbal recall are related in these children. It may be that the verbal recall impairment seen here was driven by a reduction in general verbal ability in a subset of participants. However the literature would suggest that verbal memory has a role in the development of vocabulary (e.g. Gathercole, Service, Hitch, Adams & Martin, 1999), and therefore controlling for vocabulary level in this research may have masked a real difference between these groups in verbal memory. A third alternative is that PLEs interfered with test performance during the assessment, such that performance was reduced by intrusive experiences which may not reflect a truly neuropsychological impairment.

The current research provides limited support for the applicability of neurodevelopmental models to the scientific understanding of PLEs in childhood, but they do not fully account for these experiences. It is clear that PLEs can occur in the absence of impairment of the neuropsychological factors assessed here. However, the



neurodevelopmental models have been developed to explain the development of schizophrenia, and not more normative experiences. As such, neuropsychological factors may be important in a broader model of PLEs in childhood, which may indicate a risk of a more enduring or consistent course of these experiences in a subset of children.

#### 4.3.2. Multifactorial models of psychotic experiences

The research presented here provides strong evidence that the multifactorial models of psychotic experiences in adults are useful frameworks to guide initial research into the development and presentation of PLEs in childhood. It has provided evidence that PLEs are associated with affective, cognitive, social and emotional factors, and further that these distinguish between groups of young people with PLEs and concurrent distress and clinical controls.

Within these models both anxiety and depression have been seen to contribute to the emergence and maintenance of psychosis (see Section 1.4.2.2), with Freeman and Garety giving more focus to anxiety (Freeman, Garety & Phillips, 2000; Freeman & Garety, 2003) and others (e.g. Birchwood, 2003) emphasising the involvement of depression. This research provides further evidence for the involvement of both anxiety and depression, and associated cognitive processes, with both being associated with PLEs in childhood. Initial evidence was also provided for the particular role of depression in predicting PLEs at this stage of development, though this finding requires replication and it is premature to suggest that depression has a greater role. Indeed, the areas of anxiety identified as distinguishing between the two participant groups were particularly interesting theoretically as they reflect both general anxiety processes and social-evaluative processes. Together with the evidence of the association of PLEs with bullying, loneliness and negative schematic beliefs about self and others this suggests a complex multifactorial interaction between processes impacting on children's social competence and cognitive and emotional development.

Furthermore this research has provided support for the role of particular cognitive biases, in this case the Jumping to Conclusions bias, in the presentation of PLEs. This research extends and parallels research with adult groups in demonstrating that just over half of children who reported both PLEs and concurrent distress displayed this bias. Importantly, although the children in the clinical control group did include some who reported PLEs in the absence of distress, none of these displayed this cognitive bias.

It has been suggested that cognitive and emotional factors may distinguish between the transitory or non-impairing experience of hallucinations and the emergence of psychosis (Krabbendam et al., 2004). This research is indicative that emotional processes are associated with PLEs. However, given the strong association between PLEs and emotional factors here it may be that although emotions are associated with emergence and maintenance of PLEs in childhood, they are less useful of predictors of later mental health

difficulties as they would not distinguish between those whose experiences persist and those that do not. In contrast the cognitive biases, and neuropsychological factors outlined above may have more predictive power in identifying children who may be at more risk in later life.

#### 4.3.3 A developmental model of PLEs

This research provides support for the suggestion made in Chapter 1 that a model of PLEs in childhood would require the involvement of more factors than included in either the neurodevelopmental models or the cognitive/multifactorial models. The factors that a developmental model of PLEs would require are outlined here.

First it is clear that a developmental model would include neuropsychological, cognitive, emotional and social factors. Some of these, particularly the cognitive and neuropsychological, might distinguish between children with a short term need for care as a result of PLEs alongside emotional difficulties from children who are at risk of more enduring mental health difficulties. Alternatively these factors might distinguish between later experiences of depression or anxiety rather than psychosis.

Furthermore, a developmental model of PLEs would need to distinguish between PLEs that are normative and those that are associated with greater distress. Indeed, the evidence presented here of the anxiety processes involved being of a particularly social evaluative nature suggest that there may be a developmental trend in PLEs which might mirror that of fear development in childhood. Factors that distinguish normative from more impairing PLEs in childhood might include more social experiences such as bullying, which would parallel the evidence in adults of the impact of trauma and social threat on the development of psychosis (Bebbington et al., 2004; 2011; Janssen et al., 2004).

Finally, a developmental model would need to take a longitudinal or sequential cross-sectional approach so that developmental trajectories could be modelled. This would enable further delineation of factors causative of and consequential to PLEs across development. This would require understanding of the developmental trajectory of normative experiences of PLEs; both their form and the appraisals made of them by children. It would also necessitate a finer grained analysis of the neuropsychological influences on PLEs, and the developmental trajectories of these influences. We do not currently have a model that accounts for the influence that neuropsychological and cognitive processes may have on future development; some deviations from a typical developmental trajectory (c.f. Thomas et al., 2009) may be more easily recovered from than others. For example, late adolescence is viewed as a time of high risk for the emergence of prodromal states, and it is being increasingly recognised that this is a time of more significant brain development than was previously thought. Changes in neuropsychological function including possible temporary declines in social cognitive skills and executive functions (Blakemore &

Choudray, 2006) may increase the risk of anomalous experiences being negatively appraised or being subject to less reality checking. This may be particularly pernicious in adolescence because of heightened levels of social comparison and this vital period of neurological and psychological change may be particularly sensitive to deviations from a typical trajectory.

A developmental model would allow for PLEs to occur within a variety of aetiological and outcome pathways, which in itself would reduce the stigma attached to these experiences within models of adult mental health.

#### **4.4 Clinical Implications**

The current research has a number of important clinical implications. First, it has extended suggestions from community based research (see sections 1.7.1 and 1.8) that there is a need for care for children who report these experiences, as they report greater levels of distress and impairment.

Second this research identifies targets for treatment. It indicates that emotional and cognitive factors are particularly important. These can be addressed within a CBT framework, as is being currently trialled within the CUEs study (c.f. Maddox et al., in press). In particular, as well as strategies to manage emotional distress this research indicates that cognitive biases might form useful targets for treatment. Personal experience of working therapeutically with a young person within this model indicated the particular importance of mood and anxiety as well as the jumping to conclusions bias. The young person was able to identify that she was more vulnerable to distressing visual hallucinations at times of high stress or low mood, and that she had a tendency with friends and family as well as with anomalous experiences to jump to quick conclusions. Therapeutic work targeted resilience through both cognitive and behavioural strategies (such as thought challenging and activity scheduling; c.f. Stallard, 2002) and also targeted the reasoning bias directly using tasks designed to highlight the need for evidence gathering in reasoning (Moritz, Veckenstedt, Randjbar, Vitzthum & Woodward, 2011; Waller, Freeman, Jolley, Dunn & Garety, 2011)

Although these treatment targets lend themselves to a CBT approach, it is relevant to this research, that the treatment of mood disorders in childhood has not been straightforward. Following short term treatment many remain symptomatic (Wood et al., 1996), and even amongst those who respond to psychological therapies most gains are not maintained at one-year follow-up (Wood et al., 1996; Brent et al., 1997). Evidence suggests that longer term treatment protocols may be necessary for the treatment of major mood disorders (March et al., 2009). High levels of symptoms of depression were seen in the PLE-ED group, and were predictive of PLEs. Should further evidence support the involvement of low mood with a need for clinical attention for PLEs in this group, it may be that the adaptations being developed in the depression field, including length of treatment will be informative. Moreover, recent research has not supported the ability of CBT to reduce transition rates to

psychosis from an at risk state (Morrison et al., 2012). It is noted that this study may be under-powered given the particularly low transition rates reported. Although Morrison et al. did find evidence for a reduction in the severity of psychotic symptoms, a recent Cochrane review (Jones, Hacker, Cormac, Measden & Irving; 2012) did not find evidence for the efficacy of CBT with adults in the reduction of symptoms of psychosis, relapse or hospitalisation. The Cochrane review did indicate that CBT was more effective in managing affective symptoms in this group. While the evidence base remains limited by the low number of large, high quality trials, the adult psychosis literature and the child CBT literature is suggestive of a need for further therapeutic developments.

The current research provides support for suggestions that more process based approaches to treatment within a CBT model may be efficacious (Hepworth et al., 2011; Freeman et al., 2011). Given the high level of rumination reported here and the evidence that rumination is associated with poor outcome in adolescent depression (e.g. Roelofs et al., 2009) adaptations of Rumination Focused CBT might be usefully incorporated into therapy for these young people (Watkins et al., 2007). Indeed, other third wave CBT approaches are being developed for use with people with psychosis (Bach et al, 2006; Chadwick, Hughes, Russell, Russell & Dagan, 2009) though the efficacy of these is not currently known.

Third, this research suggests assessments in CAMHS might usefully include exploration of distressing PLEs with young people, although assumptions should not be made about the simple presence of PLEs, given their high prevalence and probably normative nature.

Finally, a new 'Attenuated Psychosis Syndrome' is under consideration for inclusion in the Schizophrenia Spectrum and Other Psychotic Disorders section of DSM- V (see Figure 4.1 for proposed criteria). This makes a clear statement about the association of these experiences with other forms of psychotic disorder.

If help-seeking for any associated difficulties (e.g. mood or behaviour) were considered to be sufficient to meet Criterion D and help seeking specifically for support with the PLE was not required, then all participants in our PLE-ED group would meet criteria for this diagnosis. If help-seeking requires identification of the PLE as associated with the current distress, then only one of our participants would meet this criteria according to initial referral concern. It is not clear whether either of these would accurately capture the young people vulnerable to future psychosis related difficulties.

This syndrome has been put forward as a means by which to identify and support those at risk of later psychosis, given the evidence that early intervention services may be beneficial to outcome (Bird et al., 2010; though see Morrison et al., 2012). However, if this diagnosis is considered in childhood, it risks stigmatising a large group of young people,

most of whom will not later develop psychosis, based on the prevalence of PLEs in children seeking help as presented here.

Moreover, identification of this ‘syndrome’ in childhood or early adolescence, at a time when these experiences are common, risks increasing concern about them, which itself could be unhelpful. It might increase the risk of mental health difficulties though an increase in anxiety. Furthermore, such a diagnosis is likely to increase negative schematic beliefs about the self, which have been seen here to be less prominent than in adult literature, and which within a multi-factorial model of the positive symptoms of psychosis might be expected to exacerbate the difficulties. Although this may seem similar to concerns in the past about disclosure of a diagnosis to people with schizophrenia, which is now considered important and helpful (Carpenter & van Os, 2011) the use of this syndrome, which does not seem to have good enough predictive value to warrant the potential risks, in childhood, requires caution.

#### **Proposed criteria for Attenuated Psychosis Syndrome**

- A. At least one of the following symptoms are present in attenuated form with relatively intact reality testing, but of sufficient severity and/or frequency to warrant clinical attention:
  - 1. delusions/delusional ideas
  - 2. hallucinations/perceptual abnormalities
  - 3. disorganized speech/communication
- B. Symptoms in Criterion A must be present at least once per week for the past month.
- C. Symptoms in Criterion A must have begun or worsened in the past year.
- D. Symptoms in Criterion A are sufficiently distressing and disabling to the individual and/or legal guardian to lead them to seek help.
- E. Symptoms in Criterion A are not better explained by any other DSM-5 diagnosis, including Substance-Related Disorders.
- F. Clinical criteria for a Psychotic Disorder have never been met

**Figure 4.1 Proposed criteria for Attenuated Psychosis Syndrome**

A further potential problem with the use of this diagnosis would be the limiting of research into the broader experience of PLEs, including risk factors for current but transitory distress and impairment, as well as more enduring paths. This would be counter to the current evidence which indicates a far higher prevalence of these experiences in childhood than in later years. Given this high prevalence we do not currently have the means to identify which experiences are importantly associated with current distress and impairment, or which will predict later risk of mental health problems. Indeed, this high prevalence would suggest

that in at least a subset of young people the PLEs are entirely co-incidental to their mood, anxiety or behavioural difficulties.

#### **4.5 Future research**

This is the first study to report on PLEs in referred children under the age of 14. It is therefore obvious that there is a considerable amount of research that is necessary before these experiences can be fully understood. Some of these areas of future research have been alluded to above. This section will outline the areas of research which would be necessary to expand this initial research, and then briefly describe suggestions for possible future projects.

First, the relationships between factors associated with PLEs and each other require further exploration. For example, the developmental relationships between bullying, schematic beliefs and emotions are likely to be complex and multi-directional. Furthermore, it is not currently known how or whether PLEs or atypical cognitive or neuropsychological development increase vulnerability for bullying (van Dam et al, 2012). Bullying may play an aetiological role in the development of PLEs through the development of negative schemas or hypervigilence and a sensitisation of dopaminergic stress responses. Alternatively, the relationship between bullying and PLEs may be the consequence of other more aetiologically important factors such as social awkwardness or poor motor, and therefore sports, ability (Done, Crow, Johnstone & Sacker, 1994; Schrieer et al., 2009).

Second, the current research has provided a very brief examination of neuropsychological processes. It was suggested above that the verbal memory task impairment reported here might reflect a genuine impairment of memory processes, a verbal ability deficit or the interference of PLEs with task performance. More experimental methods, which could control for these factors across different memory tasks would allow for more detailed exploration of these factors. Moreover, this research provided some early evidence of potential sub-groups of children with PLEs and different neuropsychological presentation, which may reflect differing susceptibilities for enduring mental health difficulties. Given the evidence described earlier from community and at risk samples of young people, and the preliminary evidence presented here, it would be of value to explore these factors further in a clinical sample.

Third, the current research has not been able to report on the contribution that traumatic or abusive life events have on the development and trajectory of PLEs and distress.

Fourth, research focused on the normative experience of PLEs from early to late childhood and adolescence would be of value.

Fifth, although PLEs have been associated here with greater levels of distress and impairment, it is not currently known whether they do need specific targeting in therapy. It

may be the case that therapy addressing the emotional impairment would suffice. Indeed, although some of these young people may be at risk of later mental health difficulties, for others these PLEs may be epiphenomena that coincide with emotional distress.

Sixth, the relationships between each of the factors assessed here are likely to be complex, multi-directional and changing in influence across development. The modelling of developmental trajectories (Thomas et al., 2009) of these factors and of the aetiological and outcome pathways of PLEs, as has been commenced in developmental disorder research, would allow for greater understanding of the needs of these young people.

#### **4.6. Conclusions**

This research presented in this thesis enables some conclusions to be drawn about PLEs in children, and the processes associated with them.

It has been demonstrated that PLEs are common in a referred sample of 8-14 year olds, and that self –reported rates of the experiences are comparable to those reported in community samples using the same measurement instruments.

Clear associations between PLEs and affective, cognitive, social and neuropsychological factors have been presented. These associations extend the current literature on PLEs to a younger referred group and demonstrate the relevance of multi-factorial models in guiding research in this area. Indeed, this research is indicative of specific roles for mood and reasoning in predicting PLEs in this group.

Increase in distress and impairment associated with PLEs in a subset of these referred children indicates a need for intervention. However, it is also clear that further research is necessary to delineate the relationships between normative PLEs and those that require a more specific intervention, particularly in the context of distress. Moreover, while it has been suggested that affective symptoms may indicate greater vulnerability for persistence of PLEs in adults, this research indicates that affective symptoms are common in these referred children and therefore would not be of predictive value.

A clear role for cognitive factors, including probabilistic reasoning, rumination and schematic beliefs was demonstrated. These provide an extension of the literature into childhood, and provide an indication of areas of possible therapeutic intervention.

The particularly social nature of factors associated with PLEs in children was highlighted in this thesis. These factors include social anxiety, bullying, loneliness and negative schematic beliefs about others.

Limited support for the involvement of neuropsychological factors in PLEs was found. The assessment of verbal ability and verbal memory revealed evidence of memory impairment, and a subset of young people with more marked impairment of verbal ability. These young people may represent a group more vulnerable to enduring difficulties as these impairments may limit their ability to cognitively appraise anomalous experiences more

benignly, particularly given the involvement of mood, anxiety and other cognitive factors.

The factors associated with PLEs in this thesis provide support for a cognitive behavioural intervention, though it is acknowledged that the existing literature, and importance of processes such as rumination reported here, are indicative that further developments of this approach may be beneficial.

Finally, although the factors identified here are consistent with adult models of psychosis, it has been argued that a normalising approach should be taken to these experiences in childhood. They are clearly frequently occurring phenomena, which require intervention in some, but which are not inevitably associated with psychosis. It is suggested that it is important to work to understanding these experiences within a developmental framework.



## References

- Abela, J.R.Z., Brozina, K. & Haigh, E.P. (2002) An examination of the response styles theory of depression in third- and seventh-grade children: A short-term longitudinal study. *Journal of Abnormal Child Psychology*, 30, 515-527.
- Abela, JR..Z. Vanderbilt, E. & Rochon, A. (2004) A test of the integration of the response styles and social support theories of depression in third and seventh grade children. *Journal of Social and Clinical Psychology*, 23, 653-674.
- Achenbach, T.M. (1991) *Manual for the Youth Self-Report and 1991 Profile*. University of Vermont Department of Psychiatry, Burlington
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child Adolescent Behavioural and Emotional Problems. Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, 101(2), 213-232.
- Addington, J., Cornblatt, B. A., Cadenhead, K. S., Cannon, T. D., McGlashan, T. H., Perkins, D. O., et al. (2011). At Clinical High Risk for Psychosis: Outcome for Nonconverters. . *American Journal of Psychiatry*, 168(8), 800-805.
- Addington, J., Penn, D.L., Woods, S.W., Addington, D., & Perkins, D.O. (2008) Facial Affect Recognition in Individuals at Clinical High Risk for Psychosis, *British Journal of Psychiatry*, 192, 67-68.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington D.C.: American Psychiatric Association.
- Angold, A., Costello, E. J., Messer, S. C., Pickles, A., Winder, F., & Silver, D. (1995) The development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research*, 5, 237 - 249.

- Armando, M., Nelson, B., Yung, A. R., Ross, M., Birchwood, M., Girardi, P., et al. (2010). Psychotic-like experiences and correlation with distress and depressive symptoms in a community sample of adolescents and young adults. . *Schizophrenia Research*, 119, 258-265.
- Arseneault, L., Bowes, L., & Shakoor, S. (2010). Bullying victimization in youths and mental health problems: 'Much ado about nothing'? *Psychological Medicine*, 40(5), 717-729.
- Arseneault, L., Cannon, M., Fisher, H. L., Polanczyk, G., Moffitt, T. E., & Caspi, A. (2011). Childhood Trauma and Children's Emerging Psychotic Symptoms: A Genetically Sensitive Longitudinal Cohort Study. *American Journal of Psychiatry*, 168(1), 65-72.
- Asaad, G., & Shapiro, B. (1986). Hallucinations - theoretical and clinical overview. *American Journal of Psychiatry*, 143(9), 1088-1097.
- Bach, P.A., Gaudiano, B., Pankey, J., Herbert, J.D., & Hayes, S.C. (2006). *Acceptance, mindfulness, values, and psychosis: Applying acceptance and commitment therapy (ACT) to the chronically mentally ill*. In R. A. Baer (Ed.), *Mindfulness-based treatment approaches: Clinician's guide to evidence base and applications* (pp. 93-116). Amsterdam: Academic Press.
- Bachman, P., Niendam, T. A., Jalbrzikowski, M., Park, C. Y., Daley, M., Cannon, T. D., et al. (2012). Processing Speed and Neurodevelopment in Adolescent-Onset Psychosis: Cognitive Slowing Predicts Social Function. . *Journal of Abnormal Child Psychology*, 40(4), 645-654.
- Badcock, J.C., Paulik, G. & Maybery M.T. (2011) The role of emotion regulation in auditory hallucinations. *Psychiatry Research*. 185(3):303-8.
- Barkus, E., Stirling, J., French, P., Morrison, A., Bentall, R., & Lewis, S. (2010). Distress and Metacognition in Psychosis Prone Individuals Comparing High

- Schizotypy to the At-Risk Mental State. *Journal of Nervous and Mental Disease*, 198(2), 99-104.
- Barragan, M., Laurens, K., Blas R., Navarro, J., & Obiols, J. E. (2011). 'Theory of Mind', psychotic-like experiences and psychometric schizotypy in adolescents from the general population. *Psychiatry Research*, 186(2-3), 225-231.
- Barragan, M., Laurens, K. R., Navarro, J. B., & Obiols, J. E. (2011). Psychotic-like experiences and depressive symptoms in a community sample of adolescents. *European Psychiatry*, 26(6), 396-401.
- Bebbington, P. E., Bhugra, D., Brugha, T., Singleton, N., Farrell, M., Jenkins, R., et al. (2004). Psychosis, victimisation and childhood disadvantage - Evidence from the second British National Survey of Psychiatric Morbidity. . *British Journal of Psychiatry*, 185, 220-226.
- Bebbington, P., Jonas, S., Kuipers, E., King, M., Cooper, C., Brugha, T., et al. (2011). Childhood sexual abuse and psychosis: data from a cross-sectional national psychiatric survey in England. *British Journal of Psychiatry*, 199(1), 29-37.
- Bechard-Evans, L., Iyer, S., Lepage, M., Joober, R., & Malla, A. (2009). Investigating cognitive deficits and symptomatology across pre-morbid adjustment patterns in first-episode psychosis. *Psychological Medicine*, 40(5), 749-759.
- Beck, A. T., & Rector, N. A. (2003). A cognitive model of hallucinations. *Cognitive Therapy and Research*, 27(1), 19-52.
- Behar, E., DiMarco, I. D., Hekler, E. B., Mohlman, J., & Staples, A. M. (2009). Current theoretical models of generalized anxiety disorder (GAD): Conceptual review and treatment implications. *Journal of Anxiety Disorders*, 23(8), 1011-1023.

- Bell, V., Halligan, P. W., & Ellis, H. D. (2008). Are anomalous perceptual experiences necessary for delusions? *Journal of Nervous and Mental Disease*, 196(1), 3-8.
- Bentall, R. P. (1990). The illusion of reality - a review and integration of psychological research on hallucinations. *Psychological Bulletin*, 107(1), 82-95.
- Bentall, R. P., Fernyhough, C., Morrison, A. P., Lewis, S., & Corcoran, R. (2007). Prospects for a cognitive-developmental account of psychotic experiences. *British Journal of Clinical Psychology*, 46, 155-173.
- Bentall, R. P., Kinderman, P., & Kaney, S. (1994). The self, attributional processes and abnormal beliefs – towards a model of persecutory delusions. *Behaviour Research and Therapy*, 32(3), 331-341.
- Bentall, R. P., & Young, H. F. (1996). Sensible hypothesis testing in deluded, depressed and normal subjects. *British Journal of Psychiatry*, 168(3), 372-375.
- Birchwood, M. (2003). Pathways to emotional dysfunction in first-episode psychosis. *British Journal of Psychiatry*, 182, 373-375.
- Birchwood, M., & Chadwick, P. (1997). The omnipotence of voices: testing the validity of a cognitive model. *Psychological Medicine*, 27(6), 1345-1353.
- Bird, V., Premkumar, P., Kendall, T., Whittington, C., Mitchell, J., & Kuipers, E. (2010). Early intervention services, cognitive-behavioural therapy and family intervention in early psychosis: systematic review. *British Journal of Psychiatry*, 197(5), 350-356.

- Blakemore, S. J., & Choudhury, S. (2006). Development of the adolescent brain: implications for executive function and social cognition. *Journal of Child Psychology and Psychiatry*, 47(3-4), 296-312.
- Bogat, G.A., Chin, R., Sabbath, W., Schwartz, C. (1983) *The Children's Social Support Questionnaire. Technical Report No.1*. East Lansing, Michigan State University
- Bolte, S., & Poustka, F. (2003). The recognition of facial affect in autistic and schizophrenic subjects and their first-degree relatives. *Psychological Medicine*, 33(5), 907-915.
- Bora, E., Yucel, M., & Pantelis, C. (2009). Cognitive functioning in schizophrenia, schizoaffective disorder and affective psychoses: meta-analytic study. *British Journal of Psychiatry*, 195(6), 475-482.
- Boschi, S., Adams, R. E., Bromet, E. J., Lavelle, J. E., Everett, E., & Galambos, N. (2000). Coping with psychotic symptoms in the early phases of schizophrenia. *American Journal of Orthopsychiatry*, 70(2), 242-252.
- Brent, D. A., Holder, D., Kolko, D., Birmaher, B., Baugher, M., Roth, C., et al. (1997). A clinical psychotherapy trial for adolescent depression comparing cognitive, family, and supportive therapy. . *Archives of General Psychiatry*, 54(9), 877-885.
- Breslau, J., Michael, L., Nancy, S. B., & Kessler, R. C. (2008). Mental disorders and subsequent educational attainment in a US national sample. . *Journal of Psychiatric Research*, 42(9), 708-716.
- Brewer, W. J., Francey, S. M., Wood, S. J., Jackson, H. J., Pantelis, C., Phillips, L. J., et al. (2005). Memory impairments identified in people at ultra-high risk for psychosis who later develop first-episode psychosis. *American Journal of Psychiatry*, 162(1), 71-78.

- Broome, M., Johns, L., Woolley, J., Brett, C., Tabraham, P., Valmaggia, L., et al. (2004). The data-gathering bias in the at-risk mental state (ARMS) for psychosis. [Meeting Abstract]. *Schizophrenia Research*, 70(1), 100-101.
- Broome, M. R., Matthiasson, P., Fusar-Poli, P., Woolley, J. B., Johns, L. C., Tabraham, P., et al. (2007). Neural correlates of executive function and working memory in the 'at risk mental state'. *European Psychiatry*, 22(Supplement 1), S30-S30.
- Broome, M. R., Woolley, J. B., Tabraham, P., Johns, L. C., Bramon, E., Murray, G. K., et al. (2005). What causes the onset of psychosis? *Schizophrenia Research*, 79(1), 23-34.
- Cameron, A. M., Oram, J., Geffen, G. M., Kavanagh, D. J., McGrath, J. J., & Geffen, L. B. (2002). Working memory correlates of three symptom clusters in schizophrenia. *Psychiatry Research*, 110(1), 49-61.
- Cahill, C., Silbersweig, D., & Frith, C. D. (1996). Psychotic experiences induced in deluded patients using distorted auditory feedback. *Cognitive Neuropsychiatry*, 1, 201-211.
- Campbell, M. L. C., & Morrison, A. P. (2007). The relationship between bullying, psychotic-like experiences and appraisals in 14-16-year olds. *Behaviour Research and Therapy*, 45(7), 1579-1591.
- Carpenter, W. T., & Strauss, J. S. (1991). The prediction of outcome in schizophrenia.4. 11-year-follow-up of the Washington IPSS cohort. *Journal of Nervous and Mental Disease*, 179(9), 517-525.
- Carpenter, W. T., & van Os, J. (2011). Should Attenuated Psychosis Syndrome Be a DSM-5 Diagnosis? *American Journal of Psychiatry*, 168(5), 460-463.

- Chadwick, P., & Birchwood, M. (1994). The omnipotence of voices – a cognitive approach to auditory hallucinations. *British Journal of Psychiatry*, 164, 190-201.
- Chadwick, P., Birchwood, M. & Trower, P. (1996) *Cognitive Therapy for delusions, voices and Paranoia*. Wiley
- Chadwick, P., Hughes, S., Russell, D., Russell, I., & Dagnan, D. (2009). Mindfulness Groups for Distressing Voices and Paranoia: A Replication and Randomized Feasibility Trial. *Behavioural and Cognitive Psychotherapy*, 37(4), 403-412.
- Chapman, L. J., Edell, W. S., & Chapman, J. P. (1980). Physical anhedonia, perceptual aberration and psychosis proneness. *Schizophrenia Bulletin*, 6(4), 639-653.
- Chapman, L. J., & Chapman, J. P. (1987). The search for symptoms predictive of schizophrenia. *Schizophrenia Bulletin*, 13(3), 497-503.
- Chipuer, H. M., & Pretty, G. H. (2000). Facets of adolescents' loneliness: A study of rural and urban Australian youth. *Australian Psychologist*, 35(3), 233-237.
- Claridge, G. (1994). Single indicator of risk for schizophrenia: Probable fact or likely myth? *Schizophrenia Bulletin*, 20(1), 151-168.
- Cohen, J. (1969). *Statistical power analysis for the behavioural sciences*. New York: Academic Press.
- Colbert, S. M., & Peters, E. R. (2002). Need for closure and jumping-to-conclusions in delusion-prone individuals. *Journal of Nervous and Mental Disease*, 190(1), 27-31.
- Connolly, J., Burnstein, S., Stevens, R. & White, D. (1987) *Interpersonal skills deficits of emotionally disturbed adolescents: Social problem solving, self*

- reports of social behaviour and self-esteem*. Unpublished Manuscript, York University, Tronto, Ontario, Canada.
- Costello, E. J., Edelbrock, C. S., & Costello, A. J. (1985). Validity of the NIMH Diagnostic Interview Schedule for Children: A comparison between psychiatric and pediatric referrals. *Journal of Abnormal Child Psychology*, 13(4), 579-595.
- Costello, A., Edelbrock, C., Kalas, R., Kessler, M., Klaric, S. (1982). *NIMH Diagnostic Interview Schedule for Children: Child Version*. National Institute of Mental Health, Rockville, MD.
- Cresswell, C. M., Kuipers, L., & Power, M. J. (1992) Social networks and support in long-term psychiatric patients. *Psychological Medicine*, 22(4), 1019-1026.
- Cullen, A. E., Dickson, H., West, S. A., Morris, R. G., Mould, G. L., Hodgins, S., et al. (2010). Neurocognitive performance in children aged 9-12 years who present putative antecedents of schizophrenia. *Schizophrenia Research*, 121(1-3), 15-23.
- Daviss, W. B., Birmaher, B., Melhem, N. A., Axelson, D. A., Michaels, S. M., & Brent, D. A. (2006). Criterion validity of the Mood and Feelings Questionnaire for depressive episodes in clinic and non-clinic subjects. . *Journal of Child Psychology and Psychiatry*, 47(9), 927-934.
- de la Serna, E., Baeza, I., Toro, J., Andres, S., Puig, O., Sanchez-Guistau, V., et al. (2010). Relationship between clinical and neuropsychological characteristics in child and adolescent first degree relatives of subjects with schizophrenia. . *Schizophrenia Research*, 116(2-3), 159-167.
- Delis, D.C., Kaplan, E. & Kramer, J.H. (2001) *Delis Kaplan Executive Function System*. The Psychological Corporation, San Antonio TX



- Department of Health, Department of Education and Skills (2007). *National Service Framework for Children Young People and Maternity Services: The Mental Health and Psychological Well-being of Children and Young People: Standard 9*. The Stationary Office.
- Dhossche, D., Ferdinand, R., Van der Ende, J., Hofstra, M. B., & Verhulst, F. (2002). Diagnostic outcome of self-reported hallucinations in a community sample of adolescents. . *Psychological Medicine*, 32(4), 619-627.
- Dominguez, M. D. G., Wichers, M., Lieb, R., Wittchen, H. U., & van Os, J. (2011). Evidence That Onset of Clinical Psychosis Is an Outcome of Progressively More Persistent Subclinical Psychotic Experiences: An 8-Year Cohort Study. *Schizophrenia Bulletin*, 37(1), 84-93.
- Done, D. J., Crow, T. J., Johnstone, E. C., & Sacker, A. (1994). Childhood antecedents of schizophrenia and affective illness. Social Adjustment at ages 7 and 11. *British Medical Journal*, 309(6956), 699-703.
- Dudley, R. E. J., John, C. H., Young, A. W., & Over, D. E. (1997). Normal and abnormal reasoning in people with delusions. *British Journal of Clinical Psychology*, 36, 243-258.
- Dunn, L. M., Dunn, L. M., Whetton, C., & Burley, J. (1997). *British Picture Vocabulary Scale* (2nd ed.): Windsor, U.K.: NFER-Nelson.
- Eack, S. M., Pogue-Geile, M. F., Greeno, C. G., & Keshavan, M. S. (2009). Evidence of factorial variance of the Mayer-Salovey-Caruso Emotional Intelligence Test across schizophrenia and normative samples. *Schizophrenia Research*, 114(1-3), 105-109.
- Eastvold, A. D., Heaton, R. K., & Cadenhead, K. S. (2007). Neurocognitive deficits in the (putative) prodrome and first episode of psychosis. *Schizophrenia Research*, 93(1-3), 266-277.

- Egan, M. F., Goldberg, T. E., Gscheidle, T., Weirich, M., Rawlings, R., Hyde, T. M., et al. (2001). Relative risk for cognitive impairments in siblings of patients with schizophrenia. . *Biological Psychiatry*, 50(2), 98-107.
- Elkington, K. S., Hackler, D., McKinnon, K., Borges, C., Wright, E. R., & Wainberg, M. L. (2012). Perceived Mental Illness Stigma Among Youth in Psychiatric Outpatient Treatment. . *Journal of Adolescent Research*, 27(2), 290-317.
- Endler, N. S., & Parker, J. D. A. (1990). Multidimensional assessment of coping – a critical evaluation. *Journal of Personality and Social Psychology*, 58(5), 844-854.
- Erlenmeyerkimling, L., & Cornblatt, B. A. (1992). A summary of attentional findings in the New York high risk project. *Journal of Psychiatric Research*, 26(4), 405-426.
- Erlenmeyer-Kimling, L., Rock, D., Roberts, S. A., Janal, M., Kestenbaum, C., Cornblatt, B., et al. (2000). Attention, memory, and motor skills as childhood predictors of schizophrenia-related psychoses: The New York high-risk project. *American Journal of Psychiatry*, 157(9), 1416-1422.
- Escher, S., Romme, M., Buiks, A., Delespaul, P., & Van Os, J. (2002). Independent course of childhood auditory hallucinations: a sequential 3-year follow-up study. *Br J Psychiatry Suppl*, 43, s10-18.
- Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion*, 7(2), 336-353.
- Fearon, P., & Morgan, C. (2006). Environmental factors in schizophrenia: The role of migrant studies. *Schizophrenia Bulletin*, 32(3), 405-408.
- Field, A. (2005). *Discovering statistics using SPSS*. London: Sage Publications.

- Finkelstein, J. R. J., Cannon, T. D., Gur, R. E., Gur, R. C., & Moberg, P. (1997). Attentional dysfunctions in neuroleptic-naïve and neuroleptic-withdrawn schizophrenic patients and their siblings. *Journal of Abnormal Psychology*, 106(2), 203-212.
- Fletcher, J. M. (2008). Adolescent depression: diagnosis, treatment and educational attainment. *Health Economics*, 17(11), 1215-1235.
- Forrester, G., & Geffen, G. (1991). Performance measures of 7- to 15-year-old children on the auditory verbal learning task. *The Clinical Neuropsychologist*, 5, 345-359.
- Fowler, D., Freeman, D., Smith, B., Kuipers, E., Bebbington, P., Bashforth, H., Coker, S., Hodgekins, J., Gracie, A., Dunn, G. & Garety, P. (2006) The Brief Core Schema Scales (BCSS): psychometric properties and associations with paranoia and grandiosity in non-clinical and psychosis samples. *Psychological Medicine*, 36 (6) 749 - 759.
- Freeman, D. (2007). Suspicious minds: The psychology of persecutory delusions. *Clinical Psychology Review*, 27(4), 425-457.
- Freeman, D. (2011). Improving cognitive treatments for delusions. *Schizophrenia Research*, 132(2-3), 135-139.
- Freeman, D., & Fowler, D. (2009). Routes to psychotic symptoms: Trauma, anxiety and psychosis-like experiences. *Psychiatry Research*, 169(2), 107-112.
- Freeman, D., & Garety, P. A. (2003). Connecting neurosis and psychosis: the direct influence of emotion on delusions and hallucinations. *Behaviour Research and Therapy*, 41(8), 923-947.
- Freeman, D., Garety, P. A., & Phillips, M. L. (2000). An examination of hypervigilance for external threat in individuals with generalized anxiety disorder and individuals with persecutory delusions using visual scan paths. .

---

*Quarterly Journal of Experimental Psychology Section a-Human Experimental Psychology*, 53(2), 549-567.

Freeman, D., McManus, S., Brugha, T., Meltzer, H., Jenkins, R., & Bebbington, P. (2011). Concomitants of paranoia in the general population. *Psychological Medicine*, 41(5), 923-936.

Freeman, L. N., Poznanski, E. O., Grossman, J. A., Buchsbaum, Y. Y. & Banegas, M. E. (1985). Psychotic and depressed children: A new entity. *Journal of the American Academy of Child Psychiatry*, 24, 95-102.

Freeman, D., Pugh, K., & Garety, P. (2008). Jumping to conclusions and paranoid ideation in the general population. *Schizophrenia Research*, 102(1-3), 254-260.

Frith, C.D. (1992) *The cognitive neuropsychology of schizophrenia*. Psychology Press.

Frith, C.D., Friston, K.J., Liddle, P.F., Frackowiak, R.S. (1992) PET imaging and cognition in schizophrenia. *J R Soc Med*, 85 (4), 222-224

Fusar-Poli, P., Byrne, M., Valmaggia, L., Day, F., Tabraham, P., Johns, L., et al. (2010). Social dysfunction predicts two years clinical outcome in people at ultra high risk for psychosis. *Journal of Psychiatric Research*, 44(5), 294-301.

Garety, P. A., Bebbington, P., Fowler, D., Freeman, D., & Kuipers, E. (2007). Implications for neurobiological research of cognitive models of psychosis: a theoretical paper. *Psychological Medicine*, 37(10), 1377-1391.

Garety, P. A., & Freeman, D. (1999). Cognitive approaches to delusions: A critical review of theories and evidence. *British Journal of Clinical Psychology*, 38, 113-154.

- Garety, P. A., Freeman, D., Jolley, S., Dunn, G., Bebbington, P. E., Fowler, D. G., et al. (2005). Reasoning, emotions, and delusional conviction in psychosis. *Journal of Abnormal Psychology, 114*(3), 373-384.
- Garety, P. A., Hemsley, D. R., & Wessely, S. (1991). Reasoning in deluded schizophrenic and paranoid patients – biases in performance on a probabilistic inference task. *Journal of Nervous and Mental Disease, 179*(4), 194-201.
- Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of the positive symptoms of psychosis. . *Psychological Medicine, 31*(2), 189-195.
- Gathercole, S. E., Service, E., Hitch, G. J., Adams, A. M., & Martin, A. J. (1999). Phonological short-term memory and vocabulary development: Further evidence on the nature of the relationship. *Applied Cognitive Psychology, 13*(1), 65-77.
- Goodman R (2001) Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 1337-1345.
- Goodman R, Ford T, Simmons H, Gatward R, Meltzer H (2000) Using the Strengths and Difficulties Questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. *British Journal of Psychiatry, 177*, 534-539.
- Goodman A, Lamping DL, Ploubidis GB (2010) When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the Strengths and Difficulties Questionnaire (SDQ): data from British parents, teachers and children. *Journal of Abnormal Child Psychology, 38*, 1179-1191.

- Goodman R, Meltzer H, Bailey V (1998) The Strengths and Difficulties Questionnaire: A pilot study on the validity of the self-report version. *European Child and Adolescent Psychiatry*, **7**, 125-130.
- Goodman R (1997) The Strengths and Difficulties Questionnaire: A Research Note. *Journal of Child Psychology and Psychiatry*, **38**, 581-586.
- Grant, A. M., Franklin, J., & Langford, P. (2002). The self-reflection and insight scale: A new measure of private self-consciousness. *Social Behavior and Personality*, **30**(8), 821-835.
- Gray, J. R., Braver, T. S., & Raichle, M. E. (2002). Integration of emotion and cognition in the lateral prefrontal cortex. *Proceedings of the National Academy of Sciences of the United States of America*, **99**(6), 4115-4120.
- Guillem, F., Rinaldi, M., Parnpoulova, T., & Stip, E. (2008). The complex relationships between executive functions and positive symptoms in schizophrenia. . *Psychological Medicine*, **38**(6), 853-860.
- Halari, R., Premkumar, P., Farquharson, L., Fannon, D., Kuipers, E. & Kumari, V. (2009) Rumination and negative symptoms in schizophrenia. *Journal of Nervous and Mental Disorders*. **197**(9):703-6.
- Hanssen, M., Bak, M., Bijl, R., Vollebergh, W. & van Os, J. (2005). The incidence and outcome of subclinical psychotic experiences in the general population. *British Journal of Clinical Psychology* **44**, 181–191.
- Heather M. Chipuer & Grace H. Pretty (2000): Facets of adolescents' loneliness: A study of rural and urban Australian youth, *Australian Psychologist*, **35**:3, 233-237
- Hemsley, D. R. (1993). A simple (or simplistic – questionable) cognitive model for schizophrenia. *Behaviour Research and Therapy*, **31**(7), 633-645.

- Hepworth, C., Startup, H., & Freeman, D. (2011). Developing Treatments of Persistent Persecutory Delusions The Impact of an Emotional Processing and Metacognitive Awareness Intervention. *Journal of Nervous and Mental Disease*, 199(9), 653-658.
- Hoffman, R. E. (1986). Verbal hallucinations and language production processes in schizophrenia. *Behavioral and Brain Sciences*, 9(3), 503-517.
- Horwood, J., Salvi, G., Thomas, K., Duffy, L., Gunnell, D., Hollis, C., et al. (2008). IQ and non-clinical psychotic symptoms in 12-year-olds: results from the ALSPAC birth cohort. *British Journal of Psychiatry*, 193(3), 185-191.
- Huq, S. F., Garety, P. A., & Hemsley, D. R. (1988). Probabilistic judgements in deluded and non-deluded subjects. *Quarterly Journal of Experimental Psychology Section a-Human Experimental Psychology*, 40(4), 801-812.
- Jacobson, S., Kelleher, I., Harley, M., Murtagh, A., Clarke, M., Blanchard, M., et al. (2010). Structural and functional brain correlates of subclinical psychotic symptoms in 11-13 year old schoolchildren. *Neuroimage*, 49(2), 1875-1885.
- Janssen, I., Krabbendam, L., Bak, M., Hanssen, M., Vollebergh, W., de Graaf, R., et al. (2004). Childhood abuse as a risk factor for psychotic experiences. *Acta Psychiatrica Scandinavica*, 109(1), 38-45.
- Janssen, I., Krabbendam, L., Jolles, J., & van Os, J. (2003). Alterations in theory of mind in patients with schizophrenia and non-psychotic relatives. *Acta Psychiatrica Scandinavica*, 108(2), 110-117.
- Joffe, R. D., Dobson, K. S., Fine, S., Marriage, K., & Haley, G. (1990). Social problem-solving in depressed, conduct disorders and normal adolescents. *Journal of Abnormal Child Psychology*, 18(5), 565-575.
- Johnson, M. K. (1997). Source monitoring and memory distortion. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 352(1362), 1733-1745.

- Johnstone, E. C., Ebmeier, K. P., Miller, P., Owens, D. G. C., & Lawrie, S. M. (2005). Predicting schizophrenia: findings from the Edinburgh high-risk study. *British Journal of Psychiatry*, 186, 18-25.
- Jones C, Hacker D, Cormac I, Meaden A, Irving CB. (2012) Cognitive behaviour therapy versus other psychosocial treatments for schizophrenia. Cochrane Database of Systematic Reviews 2012, Issue 4. Art. No.: CD008712. DOI: 10.1002/14651858. CD008712.pub2.
- Jones, S. R., & Fernyhough, C. (2009). Rumination, reflection, intrusive thoughts, and hallucination-proneness: Towards a new model. *Behaviour Research and Therapy*, 47(1), 54-59.
- Kaufman, J., Birmaher, B., Brent, D., Rao, U. M. A., Flynn, C., Moreci, P., et al. (1997). Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL): Initial Reliability and Validity Data. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(7), 980-988.
- Kapur, S. (2003). Psychosis as a state of aberrant salience: A framework linking biology, phenomenology, and pharmacology in schizophrenia. *American Journal of Psychiatry*, 160(1), 13-23.
- Kelleher, I., Harley, M., Lynch, F., Arseneault, L., Fitzpatrick, C., & Cannon, M. (2008). Associations between childhood trauma, bullying and psychotic symptoms among a school-based adolescent sample. *British Journal of Psychiatry*, 193(5), 378-382.
- Kelleher, I., Harley, M., Murtagh, A., & Cannon, M. (2011). Are Screening Instruments Valid for Psychotic-Like Experiences? A Validation Study of Screening Questions for Psychotic-Like Experiences Using In-Depth Clinical Interview. *Schizophrenia Bulletin*, 37(2), 362-369.



- Kelleher, I., Murtagh, A., Molloy, C., Roddy, S., Clarke, M. C., Harley, M., et al. (2012). Identification and Characterization of Prodromal Risk Syndromes in Young Adolescents in the Community: A Population-Based Clinical Interview Study. . *Schizophrenia Bulletin*, 38(2), 239-246.
- Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder - Developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry*, 60(7), 709-717.
- Kinoshita, Y., Shimodera, S., Nishida, A., Kinoshita, K., Watanabe, N., Oshima, N., et al. (2011). Psychotic-like experiences are associated with violent behavior in adolescents. *Schizophrenia Research*, 126(1-3), 245-251.
- Klein, J.B., Jacobs, R.H. & Reinecke, M.A. (2007) Cognitive-behavioural therapy for adolescent depression: a meta-analytic investigation of changes in effect-size estimates. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46, 1403-1413.
- Krabbendam, L., Myin-Germeys, I., Hanssen, M., Bijl, R. V., de Graaf, R., Vollebergh, W., et al. (2004). Hallucinatory experiences and onset of psychotic disorder: evidence that the risk is mediated by delusion formation. *Acta Psychiatrica Scandinavica*, 110(4), 264-272.
- Kroll, J. L. (2007). New directions in the conceptualization of psychotic disorders. . *Current Opinion in Psychiatry*, 20(6), 573-577.
- Kuyken, W., Watkins, E., Holden, E. & Cook, W. (2006) Rumination in adolescents at risk for depression. *Journal of Affective Disorders*, 96, 39-47.
- Lataster, T., van Os, J., Drukker, M., Henquet, C., Feron, F., Gunther, N., et al. (2006). Childhood victimisation and developmental expression of non-clinical delusional ideation and hallucinatory experiences - Victimization and

- non-clinical Psychotic experiences. *Social Psychiatry and Psychiatric Epidemiology*, 41(6), 423-428.
- Laurens, K. R., Hobbs, M. J., Sunderland, M., Green, M. J., & Mould, G. L. (2011). Psychotic-like experiences in a community sample of 8000 children aged 9 to 11 years: an item response theory analysis. *Psychological Medicine*, 1-10.
- Laurens, K. R., Hodgins, S., Mould, G. L., West, S. A., Schoenberg, P. L. A., Murray, R. M., et al. (2010). Error-Related Processing Dysfunction in Children Aged 9 to 12 Years Presenting Putative Antecedents of Schizophrenia. *Biological Psychiatry*, 67(3), 238-245.
- Laurens, K.R., Hodgins, S., Taylor, E.A., & Murray, R.M. (2011) Is earlier intervention for schizophrenia possible? Identifying antecedents of schizophrenia in children aged 9-12 years. In: David, A.S., McGuffin, P., & Kapur, S. (Eds.) *Schizophrenia: The Final Frontier*. Psychology Press: London.
- Laurens, K. R., Hodgins, S., West, S. A., & Murray, R. M. (2007). Prevalence and correlates of psychotic-like experiences and other developmental antecedents of schizophrenia in children aged 9-12 years. *Schizophrenia Bulletin*, 33(2), 239-239.
- Laurens, K. R., Murray, R. M., Taylor, E. A., West, S. A., & Hodgins, S. (2008). Children presenting putative antecedents of schizophrenia: are they potential targets for preventative interventions? *Early Intervention in Psychiatry*, 2, A56-A56.
- Laurens, K. R., West, S. A., Taylor, E. A., Murray, R. M., & Hodgins, S. (2008). Prevalence and correlates of psychotic-like experiences and other putative antecedents of schizophrenia in children aged 9-12 years. *European Psychiatry*, 23, S17-S18.

- Leeson, V. C., Barnes, T. R. E., Harrison, M., Matheson, E., Harrison, I., Mutsatsa, S. H., et al. (2010). The Relationship Between IQ, Memory, Executive Function, and Processing Speed in Recent-Onset Psychosis: 1-Year Stability and Clinical Outcome. *Schizophrenia Bulletin*, 36(2), 400-409.
- Leeson, V. C., Robbins, T. W., Franklin, C., Harrison, M., Harrison, I., Ron, M. A., et al. (2009). Dissociation of long-term verbal memory and fronto-executive impairment in first-episode psychosis. *Psychological Medicine*, 39(11), 1799-1808.
- Lencz, T., Smith, C. W., McLaughlin, D., Auther, A., Nakayama, E., Hovey, L., et al. (2006). Generalized and specific neurocognitive deficits in prodromal schizophrenia. *Biological Psychiatry*, 59(9), 863-871.
- Lin, A., Wigman, J. T. W., Nelson, B., Vollebergh, W. A. M., van Os, J., Baksheev, G., et al. (2011). The relationship between coping and subclinical psychotic experiences in adolescents from the general population - a longitudinal study. *Psychological Medicine*, 41(12), 2535-2546.
- Lovatt, A., Mason, O., Brett, C., & Peters, E. (2010). Psychotic-Like Experiences, Appraisals, and Trauma. . *Journal of Nervous and Mental Disease*, 198(11), 813-819.
- Mackie, C. J., Castellanos-Ryan, N., & Conrod, P. J. (2011). Developmental trajectories of psychotic-like experiences across adolescence: impact of victimization and substance use. *Psychological Medicine*, 41(1), 47-58.
- Maddox, L., Jolley, S., Laurens, K., Hirsch, C., Hodgins, S., Browning, S., Bravery, L., Bracegirdle, K., Smith, P., Kuipers, E. (in press) Cognitive behavioural therapy for unusual experiences in children: a case series. *Child and Adolescent Mental Health*.

- March, J., Silva, S., Curry, J., Wells, K., Fairbank, J., Burns, B., et al. (2009). The Treatment for Adolescents With Depression Study (TADS): outcomes over 1 year of naturalistic follow-up. *The American Journal of Psychiatry*, 166(10), 1141-1149.
- McKay, R., Langdon, R., & Coltheart, M. (2006). Need for closure, jumping to conclusions, and decisiveness in delusion-prone individuals. *Journal of Nervous and Mental Disease*, 194(6), 422-426.
- Meiser-Stedman, R., Dagleish, T., Smith, P., Yule, W., & Glucksman, E. (2007). Diagnostic, demographic, memory quality, and cognitive variables associated with acute stress disorder in children and adolescents. *Journal of Abnormal Psychology*, 116, 65-79.
- Meltzer, H., Gatwood, R., Goodman, R. & Ford, T. (2003) Mental health of children and adolescents in Great Britain, *International Review of Psychiatry*, 15, 185-187
- Messer, S. C., Angold, A., Costello, E.J., Loeber, R., Van Kammen, W., & Stouthamer-Loeber, M. (1995). Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents: Factor composition and structure across development. *International Journal of Methods in Psychiatric Research*, 5, 251-262.
- Miclutia, I., & Popescu, C. (2008). Working memory in first-episode schizophrenic patients and their healthy siblings. *Journal of Cognitive and Behavioral Psychotherapies*, 8(1), 17-30.
- Mills, C., Guerin, S., Lynch, F., Daly, I., & Fitzpatrick, C. (2004). The relationship between bullying, depression and suicidal thoughts/behaviour in Irish adolescents. *Irish Journal of Psychological Medicine*, 21(4), 112-116.
- Morgan, C., Fisher, H., Hutchinson, G., Kirkbride, J., Craig, T. K., Morgan, K., et al. (2009). Ethnicity, social disadvantage and psychotic-like experiences in a

- healthy population based sample. *Acta Psychiatrica Scandinavica*, 119(3), 226-235.
- Moritz, S., Veckenstedt, R., Randjbar, S., Vitzthum, F., & Woodward, T.S. (2011) Antipsychotic treatment beyond antipsychotics: metacognitive intervention for schizophrenia patients improves delusional symptoms. *Psychological Medicine*, 41, 1823-32.
- Moritz, S., & Woodward, T. S. (2005). Jumping to conclusions in delusional and non-delusional schizophrenic patients. *British Journal of Clinical Psychology*, 44, 193-207.
- Morrison, A. P., Bentall, R. P., French, P., Walford, L., Kilcommons, A., Knight, A., et al. (2002). Randomised controlled trial of early detection and cognitive therapy for preventing transition to psychosis in high-risk individuals. Study design and interim analysis of transition rate and psychological risk factors. *The British Journal of Psychiatry. Supplement*, 43, s78-84.
- Morrison, A. P., French, P., Stewart, S. L. K., Birchwood, M., Fowler, D., Gumley, A. I., et al. (2012). Early detection and intervention evaluation for people at risk of psychosis: multisite randomised controlled trial. *British Medical Journal*, 344: e2233 doi: 10.1136/bmj.e2233
- Morrison, A.P., Haddock, G. & Tarrier, N. (1995). Intrusive thoughts and auditory hallucinations: A cognitive approach. *Behavioural and Cognitive Psychotherapy*, 23, 265–280.
- Morrison, A. P., & Wells, A. (2003). A comparison, of metacognitions in patients with hallucinations, delusions, panic disorder, and non-patient controls. *Behaviour Research and Therapy*, 41(2), 251-256.
- Mortensen, P. B., Pedersen, C. B., Westergaard, T., Wohlfahrt, J., Ewald, H., Mors, O., et al. (1999). Effects of family history and place and season of birth on

- the risk of schizophrenia. *New England Journal of Medicine*, 340(8), 603-608.
- Muris P, Meesters C, Eijkelenboom A, Vincken M (2004) The self-report version of the Strengths and Difficulties Questionnaire: Its psychometric properties in 8- to 13-year-old non-clinical children. *British Journal of Clinical Psychology*, 43, 437-448.
- Niemi, L. T., Suvisaari, J. M., Tuuio-Henriksson, A., & Lonnqvist, J. K. (2003). Childhood developmental abnormalities in schizophrenia: evidence from high-risk studies. *Schizophrenia Research*, 60(2-3), 239-258.
- Niendam, T. A., Bearden, C. E., Johnson, J. K., McKinley, M., Loewy, R., O'Brien, M., et al. (2006). Neurocognitive performance and functional disability in the psychosis prodrome. *Schizophrenia Research*, 84(1), 100-111.
- Nishida, A., Sasaki, T., Nishimura, Y., Tanii, H., Hara, N., Inoue, K., et al. (2010). Psychotic-like experiences are associated with suicidal feelings and deliberate self-harm behaviors in adolescents aged 12-15 years. *Acta Psychiatrica Scandinavica*, 121(4), 301-307.
- Nishida, A., Tanii, H., Nishimura, Y., Hara, N., Inoue, K., Sasaki, T., et al. (2008). The prevalence of self-harm behaviors and suicidal ideations among early adolescents with psychotic-like experiences in general population. *Early Intervention in Psychiatry*, 2, A132-A132.
- Nishida, A., Tanii, H., Nishimura, Y., Kajiki, N., Inoue, K., Okada, M., et al. (2008). Associations between psychotic-like experiences and mental health status and other psychopathologies among Japanese early teens. *Schizophrenia Research*, 99(1-3), 125-133.
- Nolenhoeksema, S., & Morrow, J. (1991). A prospective study of depression and post-traumatic stress symptoms after a natural disaster – the 1989 Loma-

- Prieta earthquake. *Journal of Personality and Social Psychology*, 61(1), 115-121.
- Norman, R. M. G., Malla, A. K., Manchanda, R., Harricharan, R., Takhar, J., & Northcott, S. (2005). Social support and three-year symptom and admission outcomes for first episode psychosis. *Schizophrenia Research*, 80(2-3), 227-234.
- Nuechterlein, K. H., & Dawson, M. E. (1984). Information processing and attentional functioning in the developmental course of schizophrenic disorders. *Schizophrenia Bulletin*, 10(2), 160-203.
- Owens, D. G. C., & Johnstone, E. C. (2006). Precursors and prodromata of schizophrenia: findings from the Edinburgh High Risk Study and their literature context. *Psychological Medicine*, 36(11), 1501-1514.
- Peters, E., Day, S., McKenna, J., & Orbach, G. (1999). Delusional ideation in religious and psychotic populations. *British Journal of Clinical Psychology*, 38, 83-96.
- Peters, E., & Garety, P. (2006). Cognitive functioning in delusions: A longitudinal analysis. *Behaviour Research and Therapy*, 44(4), 481-514.
- Peters, E. R., Joseph, S. A., & Garety, P. A. (1999). Measurement of delusional ideation in the normal population: Introducing the PDI (Peters et al. Delusions Inventory). *Schizophrenia Bulletin*, 25(3), 553-576.
- Philips, L. D., & Edwards, W. (1966). Conservatism in a simple probability inference task. *Journal of Experimental Psychology*, 72(3), 346-354.
- Platt, J. J., & Spivack, G. (1972). Social competence and effective problem-solving thinking in psychiatric patients. *Journal of Clinical Psychology*, 28(1), 3-&.

- Pflueger, M.O., Gschwandtner, U., Stieglitz, R. & Riecher-Rössler, A. (2007) Neuropsychological deficits in individuals with an at risk mental state for psychosis - working memory as a potential trait marker. *Schizophrenia Research*, 97(1-3):14-24.
- Polanczyk, G., Moffitt, T. E., Arseneault, L., Cannon, M., Ambler, A., Keefe, R. S. E., et al. (2010). Etiological and Clinical Features of Childhood Psychotic Symptoms Results From a Birth Cohort. *Archives of General Psychiatry*, 67(4), 328-338.
- Poulton, R., Caspi, A., Moffitt, T. E., Cannon, M., Murray, R., & Harrington, H. (2000). Children's self-reported psychotic symptoms and adult schizophreniform disorder - A 15-year longitudinal study. *Archives of General Psychiatry*, 57(11), 1053-1058.
- Rapoport, J. L., Addington, A. M., Frangou, S., & Psych, M. (2005). The neurodevelopmental model of schizophrenia: update 2005. *Molecular Psychiatry*, 10, 434-449.
- Reeder, C., Rexhepi-Johansson, T., & Wykes, T. (2010). Different Components of Metacognition and their Relationship to Psychotic-Like Experiences. *Behavioural and Cognitive Psychotherapy*, 38(1), 49-57.
- Reichenberg, A., Caspi, A., Harrington, H., Houts, R., Keefe, R. S. E., Murray, R. M., et al. (2010). Static and Dynamic Cognitive Deficits in Childhood Preceding Adult Schizophrenia: A 30-Year Study. *American Journal of Psychiatry*, 167(2), 160-169.
- Ritsner, M., Ben-Avi, I., Ponizovsky, A., Timinsky, I., Bistrov, E., & Modai, I. (2003). Quality of life and coping with schizophrenia symptoms - Quality of life and coping. *Quality of Life Research*, 12(1), 1-9.
- Rivers, I. (2004). Recollections of bullying at school and their long-term implications for lesbians, gay men, and bisexuals. *Crisis*, 25(4), 169-175.



- Roelofs, J., Rood, L., Meesters, C., te Dorsthorst, V., Bogels, S., Alloy, L. B., et al. (2009). The influence of rumination and distraction on depressed and anxious mood: a prospective examination of the response styles theory in children and adolescents. . *European Child & Adolescent Psychiatry*, 18(10), 635-642.
- Russell, D.W. (1996) UCLA Loneliness scale (Version 3): Reliability, validity and factor structure. *Journal of Personality Assessment*. 66, 20-40
- Saha, S., Scott, J. G., Varghese, D., Degenhardt, L., Slade, T., & McGrath, J. J. (2011). The association between delusional-like experiences, and tobacco, alcohol or cannabis use: a nationwide population-based survey. *BMC Psychiatry*, 11, 202 DOI: 10.1186/1471-244X-11-202
- Sauter, F.M., Heyne, D., Blöte, A.W., Van Widenfelt, B.M., & Westenberg, P.M. (2010). Assessing therapy-relevant cognitive capacities in young people: Development and psychometric evaluation of the Self-Reflection and Insight Scale for Youth. *Behavioural and Cognitive Psychotherapy*, 38, 303-317.
- Schmidt, M. (2004) *Rey Auditory Verbal Learning Test A Handbook*, Western Psychological Services, Toronto , Canada.
- Schonert-Reichl, K.A., Guhn, M., Hymel, S., Hertzman, C., Sweiss, L. Et al (2010) *Our children's voices. The Middle Years Development Instrument. Measuring the developmental health and well-being of children in middle childhood*. Human early Learning Partnership. Vancouver.
- Schreier, A., Wolke, D., Thomas, K., Horwood, J., Hollis, C., Gunnell, D., et al. (2009). Prospective Study of Peer Victimization in Childhood and Psychotic Symptoms in a Nonclinical Population at Age 12 Years. *Archives of General Psychiatry*, 66(5), 527-536.
- Schuldborg, D. (2000). Creativity and psychopathology: Categories, dimensions, and dynamics. *Creativity Research Journal*, 13(1), 105-110.

- Scott, J., Martin, G., Bor, W., Sawyer, M., Clark, J., & McGrath, J. (2009). The prevalence and correlates of hallucinations in Australian adolescents: Results from a national survey. *Schizophrenia Research*, 107(2-3), 179-185.
- Seidman, L. J., Giuliano, A. J., Meyer, E. C., Addington, J., Cadenhead, K. S., Cannon, T. D., et al. (2010). Neuropsychology of the Prodrome to Psychosis in the NAPLS Consortium Relationship to Family History and Conversion to Psychosis. *Archives of General Psychiatry*, 67(6), 578-588.
- Sheslow, D. & Adams, W. (2003) *Wide Range Assessment of Memory and Learning-Revised (WRAML-2). Administration and Technical Manual*. Wide Range, Inc., Wilmington, DE.
- Shure, M. B., & Spivack, G. (1972). Means-ends thinking, adjustment and social class among elementary school-aged children. *Journal of Consulting and Clinical Psychology*, 38(3), 348-&.
- Simon, A. E., & Umbricht, D. (2010). High remission rates from an initial ultra-high risk state for psychosis. *Schizophrenia Research*, 116(2-3), 168-172.
- Smith, B., Fowler, D. G., Freeman, D., Bebbington, P., Bashforth, H., Garety, P., et al. (2006). Emotion and psychosis: Links between depression, self-esteem, negative schematic beliefs and delusions and hallucinations. *Schizophrenia Research*, 86(1-3), 181-188.
- So, S.H., Freeman, D., Dunn, G., Kapur, S., Kuipers, E., Bebbington, P., Fowler, D. & Garety, P.A. (2012) Jumping to conclusions, a lack of belief flexibility and delusional conviction in psychosis: a longitudinal investigation of the structure, frequency, and relatedness of reasoning biases. *Journal of Abnormal Psychology*, 121(1):129-39.
- Spence, S.H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy*, 36 (5), 545-566.

- Spence, S.H., Barrett, P.M., & Turner, C.M. (2003). Psychometric properties of the Spence Children's Anxiety Scale with young adolescents. *Journal of Anxiety Disorders*, 17(6), 605-625.
- Sprong, M., Schothorst, P., Vos, E., Hox, J., & Van Engeland, H. (2007). Theory of mind in schizophrenia - Meta-analysis. *British Journal of Psychiatry*, 191, 5-13.
- Stallard, P., 2002. *Think Good - Feel Good: A cognitive behaviour therapy workbook for children and young people*. Chichester: John Wiley.
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, 87, 245-251.
- Stowkowy, J., & Addington, J. (2011). Maladaptive schemas in young people at clinical high risk for psychosis. *Schizophrenia Bulletin*, v37, supplement 1, p282-283.
- Taylor, E. M. (1959). *Psychological appraisal of children with cerebral deficits*. Cambridge, M.A.: Harvard University Press.
- Thomas, M. S. C., Annaz, D., Ansari, D., Scerif, G., Jarrold, C., & Karmiloff-Smith, A. (2009). Using Developmental Trajectories to Understand Developmental Disorders. *Journal of Speech Language and Hearing Research*, 52(2), 336-358.
- Thompson, A., Sullivan, S., Heron, J., Thomas, K., Zammit, S., Horwood, J., et al. (2011). Childhood facial emotion recognition and psychosis-like symptoms in a nonclinical population at 12 years of age: results from the ALSPAC birth cohort. *Cognitive Neuropsychiatry*, 16(2), 136-157.
- Thompson, A., Sullivan, S., Lewis, G., Zammit, S., Heron, J., Horwood, J., Thomas, K., Gunnell, D., Hollis, C., Wolke, D. & Harrison, G. (2011) Association between locus of control in childhood and psychotic symptoms in early

- adolescence: Results from a large birth cohort. *Cognitive Neuropsychiatry* 2011 (epub ahead of print)
- Trower, P., & Chadwick, P. (1995). Pathways to defense of the self – a theory of 2 types of paranoia. *Clinical Psychology-Science and Practice*, 2(3), 263-278.
- Valkenburg, P. M., & Peter, J. (2008). Adolescents' identity experiments on the Internet - Consequences for social competence and self-concept unity. *Communication Research*, 35(2), 208-231.
- van Dael, F., Versmissen, D., Janssen, I., Myin-Germeys, I., van Os, J., & Krabbendam, L. (2006). Data gathering: Biased in psychosis? *Schizophrenia Bulletin*, 32(2), 341-351.
- van Dam, D.S., van der Ven, E., Velthorst, E., Selten, J.P., Morgan, C. & de Haan L. (2012)  
Childhood bullying and the association with psychosis in non-clinical and clinical samples: a review and meta-analysis. *Psychological Medicine*. 9:1-12.
- van der Gaag, M. (2006). A neuropsychiatric model of biological and psychological processes in the remission of delusions and auditory hallucinations. *Schizophrenia Bulletin*, 32, S113-S122.
- van Os, J., Kenis, G., & Rutten, B. P. F. (2010). The environment and schizophrenia. *Nature*, 468(7321), 203-212.
- van Os, J., Linscott, R. J., Myin-Germeys, I., Delespaul, P., & Krabbendam, L. (2009). A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness-persistence-impairment model of psychotic disorder. *Psychological Medicine*, 39(2), 179-195.
- Verdoux, H., van Os, J., Maurice-Tison, S., Gay, B., Salamon, R., & Bourgeois, M. (1998). Is early adulthood a critical developmental stage for psychosis

- proneess? A survey of delusional ideation in normal subjects. . *Schizophrenia Research*, 29(3), 247-254.
- Waller, H., Freeman, D., Jolley, S., Dunn, G., & Garety, P. (2011). Targeting reasoning biases in delusions: A pilot study of the Maudsley Review Training Programme for individuals with persistent, high conviction delusions. *Journal of Behavior Therapy and Experimental Psychiatry*, 42(3), 414-421.
- Waters, F., Badcock, J., Michie, P., & Maybery, M. (2006). Auditory hallucinations in schizophrenia: Intrusive thoughts and forgotten memories. *Cognitive Neuropsychiatry*, 11(1), 65-83.
- Watkins, E., Scott, J., Wingrove, J., Rimes, K., Bathurst, N., Steiner, H., et al. (2007). Rumination-focused cognitive behaviour therapy for residual depression: A case series. . *Behaviour Research and Therapy*, 45(9), 2144-2154.
- Wechsler, D. (1999) *Wechsler Abbreviated Scale of Intelligence (WASI)*. Harcourt Assessments, San Antonio, TX
- Wechsler, D. (2005) *Wechsler Individual Achievement Test - Second UK edition*. Pearson Assessment.
- Weisz, J.R., McCarty, C.A. & Valeri, S.M. (2006) Effects of psychotherapy for depression in children and adolescents: A meta-analysis. *Psychological Bulletin*, 132, 132-149.
- Welham, J., Isohanni, M., Jones, P. & McGrath, P. (2009) The Antecedents of Schizophrenia: A Review of Birth Cohort Studies *Schizophrenia Bulletin*. 35(3): 603-623.
- Wigman, J. T. W., Vollebergh, W. A. M., Raaijmakers, Q. A. W., Iedema, J., van Dorsselaer, S., Ormel, J., et al. (2011). The Structure of The Extended

- Psychosis Phenotype in Early Adolescence-A Cross-sample Replication. *Schizophrenia Bulletin*, 37(4), 850-860.
- Wilkinson, P., Dubicka, B., Kelvin, R., Roberts, C. & Goodyer, I. (2009) Treated depression in adolescents: predictors of outcome at 28 weeks. *British Journal of Psychiatry*, 194, 334-41.
- Wood, A., Harrington, R. & Moore A (1996) Controlled trial of a brief cognitive-behavioural intervention in adolescent patients with depressive disorders. *Journal of Child Psychology and Psychiatry*, 37, 737-746.
- Wood, A., Kroll, L., Moore, A., & Harrington, R. (1995) Properties of the Mood and Feelings Questionnaire in adolescent psychiatric outpatients: A research note. *Journal of Child Psychology and Psychiatry*. 3, 327-334.
- World Health Organisation, (1990) *Composite International Diagnostic Interview*. World Health Organisation, Geneva (1990)
- Yeo, R. A., Hodde-Vargas, J., Hendren, R. L., Vargas, L. A., Brooks, W. M., Ford, C. C., et al. (1997). Brain abnormalities in schizophrenia-spectrum children: implications for a neurodevelopmental perspective. . *Psychiatry Research-Neuroimaging*, 76(1), 1-13.
- Yoshizumi, T., Murase, S., Honjo, S., Kaneko, H., & Murakami, T. (2004). Hallucinatory experiences in a community sample of Japanese children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 43(8), 1030-1036.
- Yung, A. R., Buckby, J. A., Cotton, S. M., Cosgrave, E. M., Killackey, E. J., Stanford, C., et al. (2006). Psychotic-like experiences in nonpsychotic help-seekers: Associations with distress, depression, and disability. *Schizophrenia Bulletin*, 32(2), 352-359.

- Yung, A. R., Nelson, B., Baker, K., Buckby, J. A., Baksheev, G., & Cosgrave, E. M. (2009). Psychotic-like experiences in a community sample of adolescents: implications for the continuum model of psychosis and prediction of schizophrenia. . *Australian and New Zealand Journal of Psychiatry*, 43(2), 118-128.
- Yung, A. R., Nelson, B., Stanford, C., Simmons, M. B., Cosgrave, E. M., Killackey, E., et al. (2008). Validation of "prodromal" criteria to detect individuals at ultra high risk of psychosis: 2 year follow-up. *Schizophrenia Research*, 105(1-3), 10-17.
- Yung, A. R., Phillips, L. J., McGorry, P. D., McFarlane, C. A., Francey, S., Harrigan, S., et al. (1998). Prediction of psychosis - A step towards indicated prevention of schizophrenia. . *British Journal of Psychiatry*, 172, 14-20.
- Yung, A. R., Stanford, C., Cosgrave, E., Killackey, E., Phillips, L., Nelson, B., et al. (2006). Testing the Ultra High Risk (prodromal) criteria for the prediction of psychosis in a clinical sample of young people. *Schizophrenia Research*, 84(1), 57-66.
- Ziermans, T. B., Schothorst, P. F., Sprong, M., & van Engeland, H. (2011). Transition and remission in adolescents at ultra-high risk for psychosis. *Schizophrenia Research*, 126(1-3), 58-64.
- Zubin, J., & Spring, B. (1977). Vulnerability – new view of schizophrenia. *Journal of Abnormal Psychology*, 86(2), 103-126.

## Appendix 1: Recruitment and Consent materials

Covering letter, information sheets for parent and child, consent and assent forms.

**Institute of  
Psychiatry**

**at The Maudsley**

South London and Maudsley   
NHS Foundation Trust

Dr. Suzanne Jolley  
PO77 Department of  
Psychology  
Institute of Psychiatry  
De Crespigny Park  
Denmark Hill  
London SE5 8AF

**KING'S**  
College  
**LONDON**  
*Founded 1829*  
*University of London*

Tel +44 (0) 20 7848 5028  
Fax +44 (0) 20 7848 5006  
Email :  
suzanne.jolley@kcl.ac.uk

DATE

Address

Dear \*\*\*\* ,

We are writing to everybody who is referred to Child and Adolescent Mental Health Services to ask if they would like to take part in a research study. We are contacting everybody in this way to make sure we do not miss anybody out. It is entirely up to you whether you decide to take part, and this will not affect the care you receive from the service you have been referred to in any way.

With this letter, we have sent some information sheets that describe the study and what it will involve. There is a sheet for you, as parent or carer, a short sheet for your child, and a longer sheet for your child in case they would like to know more.

If you are not interested, or would prefer not to take part, please just ignore or destroy the letter and the sheets. If you would like to find out more about the study, or think you might like to take part, please contact us on XXX XXX XXXX.

A researcher from the study will try to call you in a week or so, to check if you have received the letter and whether you would like to find out more or to take part.

You do not have to speak to the researcher, and if you would prefer them not to call you, please let us know on XXXX XXX XXXX.

Thank-you for your time.

With best wishes,

XXXXXXXXXXXX

Research Assistant





Dr. Suzanne Jolley  
Research Clinical  
Psychologist  
PO77 Department of  
Psychology  
Institute of Psychiatry



### **Information Sheet for Parents/Carers**

#### **Version 2 – 10/4/11**

Title of study: Coping with Unusual Experiences (CUES)

We are inviting you and your child to take part in a research project.

You should only take part if you want to.

If you do not want to take part, this will not affect the usual care or services that you or your child receive in any way.

Before you decide whether you want to take part, it is important for you to understand why the research is being done and what it will involve.

Please take time to read the following information carefully.

One of our team will go through the information sheet with you and answer any questions you have. This should take about 15 minutes.

Talk to other people about the project if you want to.

- Part 1 tells you the purpose of this project and what will happen to you if you take part.
- Part 2 gives you more detailed information about how the project will be carried out.

Please ask us if there is anything that is not clear or if you would like more information.

**Contact details:** XXXXXXXXXXXX

**You will be given a copy of this information sheet****Part 1**

**What is the purpose of the project?** We are trying to find new ways to help children cope with unusual experiences, emotional problems and stress. We have put together a package of strategies, which we hope will be helpful. We talk young people through the package to help them learn new ways of coping with their problems. The package is based on talking therapies which have been shown to be helpful for both adults and children reporting anxiety or worries, low mood and unusual experiences. Some children have already completed the package, and they said they liked it and found it helpful. The next step is for more children to complete the package and for us to find out how they feel and how they are coping before and after completing the package, and to compare this to children who have not completed the package.

We also want to find out more about the causes of upsetting unusual experiences in young people, so we will be asking all the children who agree to take part in the study, and their parents or carers, to answer some questions about feelings and experiences, and complete some activities about everyday problems and situations. We will then compare a group of children with unusual experiences who feel upset to children who do not have these experiences.

**What do you mean by 'unusual experiences'?** Lots of people have experiences which can seem unusual to others. For example, hearing voices that other people cannot hear, seeing, feeling or smelling things that other people cannot, or finding that things around them look somehow odd or different. These experiences are much more common than most people think and often do not cause any problems for the people experiencing them. They might even be enjoyable. However, sometimes these experiences can be upsetting or worrying to the person who has them, or can stop the person doing what they normally do. This in turn can interfere with school or work, friendships and family relationships. There are some strategies for dealing with both the experiences and the upset that can happen alongside them. The package is a

collection of these strategies, and we would like to find out whether it helps young people to cope.

**Why has my child been asked to take part?** We are offering the package to children aged 8-14 who are seeking help from Child and Adolescent Mental Health Services. For the first part of this study, we are inviting all children in the service and their parents/carers to complete two questionnaires which ask about unusual experiences and feelings. This is to find out if the package will suit your child. Your child will need to be able to speak enough English to understand the package and the questionnaires. For the second part of the study, we will offer the package to children who report an unusual experience and feeling upset. We will also ask some children who do not report an unusual experience and feeling upset to complete some questionnaires and activities.

**What will my child and I be asked to do?**

**Stage 1:** If you and your child would like to take part in the study, you will first need to sign the form at the end of this sheet, to say that you are happy to go ahead. In the first stage of the study, your child will complete the two questionnaires to see if the package is suitable. These will take about 15 minutes to complete, in a short meeting with a research worker. If the package is suitable for your child, he or she will be invited to take part in the second stage of the study.

If the package is not suitable for your child (because he or she is not having unusual experiences or feeling upset), we will ask you and your child to complete some questionnaires about feelings and experiences, and complete some activities designed to show how people think about everyday problems and situations so we can find out more about what causes unusual experiences and upset. This will usually take two or three meetings or about two hours in total, with the research worker, and can be spaced over as many meetings as you like.

**Stage 2:** In the second stage of the study, half of the children taking part will be invited to complete the package immediately, and half will be asked to wait for 3 months before completing the package. This is so that we can see if adding the package is

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more helpful than just waiting for help from Child and Adolescent Mental Health Services.

To see if the package is more helpful than just waiting, it is important that the group of children who receive the package straight away and the group who have to wait for 3 months are as similar as possible. Whether your child receives the package straight away or after a wait will therefore be decided by chance (randomly), by a process a bit like tossing a coin. This will be carried out at a centre separate to the research team, who will not have any information about you or your child. You will not be able to choose which group you and your child are in, nor will any member of the team.

Completing the package will involve your child attending some meetings with a therapist. There will usually be around 9-12 meetings lasting about 45 minutes each, but we can arrange the number and length to suit your child. The meetings will usually take place weekly for between two to three months. They will be held at a location to suit you and your child. We will try hard to make appointment times convenient for you and your child. For example, wherever possible appointments will be made outside of school hours.

As a way of checking that the therapists and research workers are all working in the same way, and working with the package as well as possible, we would like to audiorecord the meetings. You and your child will be asked whether this is OK each time they meet with the therapist or researcher.

You and your child will be asked to complete some questionnaires and activities at the very start of the study, after completing the package or after the 3-month wait, and again after one month, so we can see if any positive changes last after the package has been completed. The questionnaires and activities are to see whether the package is helping your child or not. This usually takes two or three meetings with a researcher, or about two hours in total. Your child will also be asked how they found the package and any changes they would suggest for the future. We will also ask you for feedback on how you have found things while your child has been attending the meetings.

Your child will be given a £5 gift voucher as a thank-you for taking part in the project.

**Will my and my child's taking part in the study be kept confidential?** The information you and your child give us will usually be available only to the research team. However, the researcher will share with your clinical team any important information that is relevant to the care you receive, and will let the team and your GP know that you are taking part in the study, and will note down on the team's notes system that you are taking part in the study and when they meet with you. If you or child tell us anything about someone being hurt or not safe, we will have to tell other people who are there to help with these kinds of situations. More details are included in Part 2.

**How will the information we give you be kept?** All the answers you and your child give to the questionnaires and activities will be kept on paper and as an electronic file. The recordings will be kept as electronic files. They will be kept securely and anonymously and will be identified only by a number, not by your name. Your name will be kept separately, with the number, on paper, so that we can identify your questionnaires and recordings in the future if we need to (for example, if you decide you no longer want to be part of the study). We will only identify your questionnaires for a reason like this. Your details will be kept for up to 12 years, and then will be confidentially destroyed. We will keep a completely anonymous copy of the electronic file indefinitely, from which you will not be able to be identified at all. At the very end of the study, once we have seen a number of children, you and your child will be given a summary of the results.

**Is there any risk from taking part?** We do not think that the package will be harmful in any way. We want it to be helpful and it has been designed to be fun. The questionnaires and activities are all either designed for children and their parents or carers, or especially adapted for children, and have been approved by researchers who have many years experience of working with children. However if you or your child are distressed in any way by taking part, the therapists working on the study are qualified to deal with this sensitively and appropriately. If this happens, please talk to the researcher, or to one of the therapists. (CONTACT DETAILS)

**Are there any benefits of taking part?** We hope that the children will enjoy taking part in the study and will learn some useful strategies for coping with day to day

stresses. Both children and adults also sometimes find completing the questionnaires interesting and helpful.

**Do I have to take part?**

It is up to you and your child to decide whether or not to take part in this study. If you do decide to take part you are still free to stop at any time and without giving any reasons. This will not affect any other help or support that you or your child will be offered.

**What happens when the project stops?**

When you have finished taking part in the research, you will carry on as usual seeing the team where you were originally looking for help. If this help is available before the project finishes, you will be able to still carry on with the project if you would like to. We will ask you and your child if you would be willing to be contacted regarding future projects, and if you would, we will keep your name and contact details. You will be able to ask us not to contact you at any time, and this will not affect you in any other way. This project is only running for three years from 2011, and we cannot guarantee that the package will still be available after this.

**This completes Part 1 of the Information Sheet.**

**If the information in Part 1 has interested you and you are thinking about taking part, please continue to read the additional information in Part 2 before making any decision.**

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**Part 2****What if there is a problem?**

**What if relevant new information becomes available?** Sometimes we get new information during a project. If we find out anything new about any of the questionnaires or the package which means it might be harmful or upsetting for you or your child in any way, we will tell you both at once and you can decide whether or not you want to carry on.

**What will happen if I, or my child, no longer want to carry on with the study?** If you decide you no longer want to take part, you should let us know at once. A member of the research team will talk to you about which parts you no longer want to be involved in (for example, you might not want to come for the package, but feel OK with the questionnaires). We would like to still keep the information you have already given us if this is possible, but we will check this with you as well. You can tell us that you would like us not to keep any information at all about you, and in this case we will destroy all our copies of the information you have given us. This will not affect any other care you or your child might be offered, or your rights in any other way.

**Complaints:** If you have a concern about any aspect of this study, you should ask to speak with the researchers who will do their best to answer your questions. (CONTACT DETAILS).

If you remain unhappy and wish to complain formally, you can do this through the NHS Complaints Procedure (PALS, The Maudsley Hospital, Denmark Hill, London SE5 8AZ, 0800 731 2864).

**Harm:** In the event that something does go wrong and you or your child are harmed during the research study there are no special compensation arrangements. If you are harmed and this is due to someone's negligence then you may have grounds for a legal action for compensation against your local NHS Trust but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you (if appropriate).

**Will my taking part in this study be kept confidential?** All information which is collected about you during the course of the research will be kept strictly confidential. All your answers to the questionnaires and the activities will be kept on paper and on an electronic database. The recordings will be kept as electronic files. They will be kept securely and anonymously and will be identifiable only by a number, not by your name. Your name will be kept separately, with the number, on the database and on paper, so that we can identify your questionnaires and recordings in the future if we need to (for example, if you decide you no longer want to be part of the study). We will only identify your questionnaires for a reason like this. Paper copies of questionnaires will be kept

securely by the researchers in a locked filing cabinet in a locked office. Your details will be kept for up to 12 years, and then will be confidentially destroyed. We will keep a completely anonymised copy of the database indefinitely, from which you and your child will not be able to be identified at all.

The information you give will usually be available only to the research team. However, the researcher will let your team know that you are taking part in the study, and will share with your clinical team any important information that is relevant to the care you receive. In addition, should you give any information, such as criminal disclosures, or information relating to your own, your child's or others safety, which requires action, including passing on information to others, we are legally obliged to pass this information on to services who are able to deal with these concerns.

The recordings will all be confidential and will be kept without your child's name or details in a locked filing cabinet in a locked office, except when the therapist is carrying them to and from meetings. They will be available only to members of the research team.

**What will happen to the results of the research study?** We intend to publish the results of the research. You will not be personally identified in any report/publication. We sometimes use quotes from participants when we write about the research. In this case we will tell you what we want to write and where it will be seen and check that you agree.

**Who is organising and funding the research?** The research is organised by the team, who are members of academic and clinical staff at the Institute of Psychiatry, King's College London and the South London & Maudsley NHS Trust. The research is funded by the Guy's & St. Thomas' Charity.

**Who has reviewed the study?** The study has been reviewed by the North West London REC2: 11/LO/0023.

**How can I take part?** If you would like to take part in this project, please complete the attached consent form. If you have any questions or concerns about taking part in this study please contact the researchers below.

**Contact Details:**

XXXXX



## Information Sheet for Young People

V2 10<sup>th</sup> April, 2011

### Coping with Unusual Experiences (CUES)

- ★ **What is this about?** We are asking if you want to be part of a project to find ways to help children or teenagers who have unusual experiences.
- ★ **Who are you? What do you do?** We work with children, teenagers and adults who are feeling upset or having problems and talk to them to find out what is upsetting them, then we help them find new ways to handle it.
- ★ **What are ‘unusual experiences’?** Lots of children, teenagers and adults have these, and often they are not upsetting at all, but sometimes they can be. They are things like:
  - ☞ *Hearing or seeing things that other people can't*
  - ☞ *Feeling like something weird is going on that other people don't understand*
  - ☞ *Feeling like someone is watching, or following you*
- ★ **Why are you asking me?** We are asking all children and teenagers aged 8-14 who come to this centre.
- ★ **What if I say yes?** First, we will ask you and your parent or carer some questions. This is to try to find out more about what causes unusual experiences and what makes them upsetting.
- ★ **What happens next?** If you say you have unusual experiences and you are feeling upset, we will ask you if you want to try out some new ways of trying to handle them.

- ★ **What if I say yes?** You will meet with someone who will talk to you about what is happening and ways to help. You will have up to 10 meetings, at a time and place that is good for you and your family. So we can see if the meetings are helpful, some people will have the meetings straight away, and some people will have them after 3 months.
- ★ **Will I have to wait?** You might. It is worked out by chance – a bit like tossing a coin. We can't choose who waits and who doesn't.
- ★ **Can I say no?** Yes, you can. It is up to you whether you join in. If you don't want to that is fine – no-one will mind and it won't change anything at school, at home or at the centre. Even if you say yes, you can still change your mind whenever you want and you don't need to tell us why.
- ★ **Who will know about this?** The things you tell us are private, but we will tell other people who are there to help if we are worried about whether you or someone else is safe.
- ★ **Can I find out more?** Yes. Ask your parents or carer. We have given them a longer sheet like this one that you can read if you want. If they agree, we can tell you more about joining in on the phone, or we can meet you to tell you more. You can meet us on your own or with your family – it is up to you and your parent or carer.



**Thanks for reading the sheet**



**Institute of  
Psychiatry**

**at The Maudsley**

South London and Maudsley NHS Foundation Trust

Dr. Suzanne Jolley  
PO77 Department of Psychology  
Institute of Psychiatry  
De Crespigny Park  
Denmark Hill  
London SE5 8AF  
Tel +44 (0) 20 7848 5028  
Fax +44 (0) 20 7848 5006  
Email : suzanne.jolley@kcl.ac.uk

**KING'S**  
College  
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*Founded 1829*

*University of London*

## **ASSENT FORM for Young People – V2 10<sup>th</sup> April 2011**

### *Coping with Unusual Experiences (CUES)*

**Names of researchers:**

**ID:**

Thank you for thinking about taking part in this project. The project must be explained to you before you agree to take part. If you have any questions please ask before you decide whether to join in. You will be given a copy of this form to keep.

Please tick the boxes, if you agree and the answer is 'yes':

1. I have read the Information Sheet for Young People, dated 10<sup>th</sup> April, 2011, and someone has explained it to me and answered my questions. ☐

2. I know that I can change my mind about joining in anytime and I don't have to say why. ☐

3. I know what I say is private unless it is about somebody being hurt. ☐

4. It is OK to record the meetings with me. ☐

5. I want to join in with the project. ☐

If any answers are 'no' or you don't want to join in, don't write your name. If you do want to join in, write your name on the line.

Young person's name: \_\_\_\_\_

Date: \_\_\_\_\_

6. I have explained the study and answered any questions. ☐

\_\_\_\_\_  
Name of researcher Date Signature

When completed, 1 copy for the family, 1 for researcher; 1 (original) to be kept in medical notes

**Institute of  
Psychiatry**

**at The Maudsley**

South London and Maudsley   
NHS Foundation Trust

Dr. Suzanne Jolley  
PO77 Department of Psychology  
Institute of Psychiatry  
De Crespigny Park  
Denmark Hill  
London SE5 8AF  
Tel +44 (0) 20 7848 5028  
Fax +44 (0) 20 7848 5006  
Email : suzanne.jolley@kcl.ac.uk

**KING'S**  
College  
**LONDON**  
*Founded 1829*

*University of London*

**CONSENT FORM – V2 10/4/2011**

***Title of project:*** *Coping with Unusual Experiences (CUES)*

**Names of researchers:** XXXXX

Please initial boxes:

1. I have read the information sheet dated 10/4/11 for the above project, and one of the researchers has talked to me about it. I have had enough time to think about it and ask questions.

☐

2. I understand that taking part is voluntary and that my child and I are free to withdraw at any time, without giving any reason, and without our medical care or legal rights being affected.

☐

3. I am willing for the researcher to let the team know that my child and I are taking part in the study.

☐

4. I am willing for the researcher to contact my team with any information relevant to my child's care, should this become apparent while we are taking part in the study.

☐

5. I am willing for the researchers to record this information in the team's electronic notes for my child.

☐

6. I give permission for sections of my child's medical notes to be looked at by the researchers, if it is relevant to taking part in this research (for example, to get an

☐
☐

address, age or confirm clinical information).

7. I am willing for my and my child's meetings with the therapist and researcher to be audiorecorded. ☐

8. I understand that information relating to me and my child taking part in this study will be stored in an electronic file for up to 12 years.

9. I agree to take part in the above study, and for my child to take part.

---

Name of parent/carer

Date

Signature

10. I have explained the study to this participant and answered their questions honestly and fully. ☐

---

Name of researcher

Date

Signature

When completed, 1 copy for the family, 1 for researcher; 1 (original) to be kept in medical notes

## **Appendix 2 Assessment Measures**

Names of measures were changed for data collection with young people. Names in brackets are the names of measures used with young people.

Measures were administered via an online survey. Colour printed versions illustrated with encouraging pictures were produced for use when the online survey was not available. Black and white plain versions of these are included here for reference.

### Clinical Measures

SDQ (Strengths and Difficulties Questionnaire)

PLEQ (Unusual Experiences Questionnaire)

SCAS (Things that make me nervous or worried)

SMFQ (Moods and Feelings Questionnaire)

### Social and Environmental Measures

LEI (Life Events)

Social measures: Bullying, Social Support, Loneliness (Friends and family)

### Cognitive Measures

BCSS (What I think about myself and others)

CRSQ (What I do when I feel sad or afraid)

SRIS (Thinking about thinking)

The Beads Task

### Measures not included here

BPVS – copy right

RAVLT – copyright

SPST (included in Appendix 3)

Parent Clinical measures (SDQ, PLEQ, SCAS, SMFQ) – all reworded to read ‘your/my child’ instead of ‘you/I’

### Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings			
I am restless, I cannot stay still for long			
I get a lot of headaches, stomach-aches or sickness			
I usually share with others (food, games, pens etc.)			
I get very angry and often lose my temper			
I am usually on my own. I generally play alone or keep to myself			
I usually do as I am told			
I worry a lot			
I am helpful if someone is hurt, upset or feeling ill			
I am constantly fidgeting or squirming			
I have one good friend or more			
I fight a lot. I can make other people do what I want			
I am often unhappy, down-hearted or tearful			
Other people my age generally like me			
I am easily distracted, I find it difficult to concentrate			
I am nervous in new situations. I easily lose confidence			
I am kind to younger children			
I am often accused of lying or cheating			
Other children or young people pick on me or bully me			
I often volunteer to help others (parents, teachers, children)			
I think before I do things			
I take things that are not mine from home, school or elsewhere			
I get on better with adults than with people my own age			
I have many fears, I am easily scared			
I finish the work I'm doing. My attention is good			

**Do you have any other comments or concerns?**

**Overall, do you think that you have difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?**

- ☐ No
- ☐ Yes- minor difficulties
- ☐ Yes – definite difficulties
- ☐ Yes – severe difficulties

If you have answered 'Yes' Please answer the following questions about these difficulties.

How long have these difficulties been present?

☐ Less than a month

☐ 1-5 months

☐ 6-12 months

☐ Over a year

	Not at all	Only a little	Quite a lot	A great deal
Do the difficulties upset or distress you?				
Do the difficulties interfere in your everyday life in the following areas?				
Home life?				
Friendships?				
Classroom learning?				
Leisure activities?				
Do the difficulties make it harder for those around you? (Family, friends, teachers etc.)?				



*Unusual experiences questionnaire (PLE, Laurens et al 2007) Child version*

<b>1. Some people believe that their thoughts can be read. Have other people ever read your thoughts?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>2. Have you ever believed that you were being sent special messages through the television?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>3. Have you ever thought that you were being followed or spied upon?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>4. Have you ever heard voices that other people could not hear?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>5. Have you ever felt that you were under the control of some special power?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>6. Have you ever known what another person was thinking even though that person wasn't speaking?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>7. Have you ever felt as though your body had been changed in some way that you could not understand?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>8. Do you have any special powers that other people don't have?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>9. Have you ever seen something or someone that other people could not see?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>
If true, how often has it happened over the last 2 weeks?	Not at all	Only once	2-4 times	5 or more times
How much has it upset you?	Not at all	Only a little	Quite a lot	A great deal
How much has it made things hard at home or school?	Not at all	Only a little	Quite a lot	A great deal
<b>10. If you have not had any of these experiences in the last 2 weeks, have you had any of them in the last year?</b>		<b>Not true</b>	<b>Somewhat true</b>	<b>Certainly true</b>

**Things that make me nervous or worried.**

Please check the word that shows how often each of these things happen to you. There are no wrong or right answers.				
	Never	Sometimes	Often	Always
I worry about things.				
I am scared of the dark.				
When I have a problem, I get a funny feeling in my stomach.				
I feel afraid.				
I would feel afraid of being on my own at home.				
I feel scared when I have to take a test.				
I feel afraid if I have to use public toilets or bathrooms.				
I worry about being away from my parents.				
I feel afraid that I will make a fool of myself in front of people.				
I worry that I will do badly at my school work.				
I am popular amongst other kids my age.				
I worry that something awful will happen to someone in my family.				
I suddenly feel as if I can't breathe when there is no reason for this.				
I have to keep checking that I have done things right (like the switch is off, or the door is locked).				
I feel scared if I have to sleep on my own.				
I have trouble going to school in the mornings because I feel nervous or afraid.				
I am good at sports.				
I am scared of dogs.				
I can't seem to get bad or silly thoughts out of my head.				
When I have a problem, my heart beats really fast.				
I suddenly start to tremble or shake when there is no reason for this.				
I worry that something bad will happen to me.				
I am scared of going to the doctors or dentists.				
When I have a problem, I feel shaky.				
I am scared of being in high places or lifts (elevators).				
I am a good person.				
I have to think of special thoughts to stop bad things from happening (like numbers or words).				
I feel scared if I have to travel in the car, or on a bus or a train.				
I worry what other people think of me.				
I am afraid of being in crowded places (like shopping centers, the movies, buses, busy playground).				
I feel happy.				
All of a sudden I feel really scared for no reason at all.				
I am scared of insects or spiders.				
I suddenly become dizzy or faint when there is no reason for this.				
I feel afraid if I have to talk in front of my class.				
My heart suddenly starts to beat too quickly for no reason.				
I worry that I will suddenly get a scared feeling when there is nothing to be afraid of.				
I like myself.				
I am afraid of being in small closed places, like tunnels or small rooms.				
I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order).				
I get bothered by bad or silly thoughts or pictures in my mind.				

I have to do some things in just the right way to stop bad things happening.				
I am proud of my school work.				
I would feel scared if I had to stay away from home overnight.				
Is there something else that you are really afraid of?	Yes/No			
If yes, to the last question, what is the thing that you are really afraid of?				
How often are you afraid of this thing? Only answer this question if you answered question 46.				

### Moods & Feelings Questionnaire

This form is about how you might have been feeling or acting recently. For each question, please check how much you have felt or acted this way in the **past TWO weeks**.

If a sentence was true about you most of the time, check TRUE. If a sentence was only sometimes true, check SOMETIMES. If a sentence was not true about you, check NOT TRUE.

	Not True	Sometimes	True
I felt miserable or unhappy.			
I didn't enjoy anything at all.			
I felt so tired I just sat around and did nothing.			
I was very restless.			
I felt I was no good anymore.			
I cried a lot.			
I found it hard to think properly or concentrate.			
I hated myself.			
I was a bad person.			
I felt lonely.			
I thought nobody really loved me.			
I thought I could never be as good as other kids.			
I did everything wrong.			

**Life Events Interview**

1

**Life Events Measure (v1 13/1/11)**

ID \_\_\_\_\_ Date \_\_\_\_\_

These questions are all about the last **year**. We would like to know about things that have happened to you and your family over the last year.

Please score each event on a scale of 1 to 5 for how it felt to you at the time it happened.

- 1 = very good/pleasant/happy  
 2 = quite good/pleasant/happy  
 3 = neither good or bad  
 4 = quite bad/unpleasant/sad/painful  
 5 = very bad/unpleasant/sad/painful

1. Have you changed school in the past year? YES NO (Please circle)

Date(s) Rate (circle)

If YES, give reason: \_\_\_\_\_ 1 2 3 4 5

If you have circled 4 or 5, were you upset about this for more than 2 weeks?

YES NO (Please circle)

2a. Who lives in your house? \_\_\_\_\_

2. Have there been any changes in the number of people in your household in the past year? Has anyone left or joined your family? YES NO (Please circle)

Date(s) Rate (circle)

If YES, describe changes: \_\_\_\_\_ 1 2 3 4 5

If you have circled 4 or 5, were you upset about this for more than 2 weeks?

YES NO (Please circle)

3. Have you moved house in the last 12 months? YES NO (Please circle)

Date(s) Rate (circle)  
 1 2 3 4 5

If YES, describe moves: \_\_\_\_\_

If you have circled 4 or 5, were you upset about this for more than 2 weeks?

YES NO (Please circle)

4. Have there been any disasters at home over the past year, like a fire, a flood or a burglary?
- YES NO (Please circle)
- Date(s) Rate (circle)
- If YES, describe event(s) \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_
- If you have circled 4 or 5, were you upset about this for more than 2 weeks?
- YES NO (Please circle)
5. Over the past 12 months, have you taken part in anything particularly successful or enjoyable outside school/college?
- YES NO (Please circle)
- Date(s) Rate (circle)
- If YES, describe event(s) \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_
6. In the last year, have you or any of your family or close friends had a serious illness or accident?
- YES NO (Please circle)
- If YES, describe and say who. (If more than one please describe and rate each separately)
- Date(s) Rate (circle)
- \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_ 1 2 3 4 5
- If you have circled 4 or 5, were you upset about this for more than 2 weeks?
- YES NO (Please circle)
- 7a. Have you or any of your family or close friends spent time in hospital over the past year?
- YES NO (Please circle)
- If YES, describe and say who. (If more than one hospitalisation, please describe and rate each separately)
- Date(s) Rate (circle)
- \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_ 1 2 3 4 5
- If you have circled 4 or 5, were you upset about this for more than 2 weeks?
- YES NO (Please circle)
- 7b. Have you or any of your family been away from home for any other reason over the past year?
- YES NO (Please circle)
- 7c. Have you ever run away from home?
- YES NO (Please circle)

8. Has any of your family or close friends died over the past 12 months? YES NO (Please circle)
- If YES, describe and say who. Date(s) Rate (circle)
- \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_ 1 2 3 4 5
- If you have circled 4 or 5, were you upset about this for more than 2 weeks? YES NO (Please circle)
9. Have you lost a family pet over the past year? YES NO (Please circle)
- If YES, describe: Date(s) Rate (circle)
- \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_ 1 2 3 4 5
- If you have circled 4 or 5, were you upset about this for more than 2 weeks? YES NO (Please circle)
10. Have you lost touch with any good friend over the past year? (e.g. moved away, changed school, etc) YES NO (Please circle)
- If YES, describe: Date(s) Rate (circle)
- \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_ 1 2 3 4 5
- If you have circled 4 or 5, were you upset about this for more than 2 weeks? YES NO (Please circle)
- 11a. Have you had any particular problems or difficulties with your friendships over the past year? YES NO (Please circle)
- If YES, describe: Date(s) Rate (circle)
- \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_ 1 2 3 4 5
- \_\_\_\_\_ 1 2 3 4 5
- If you have circled 4 or 5, were you upset about this for more than 2 weeks? YES NO (Please circle)

11b. Have you had any problems or difficulties with your parents or other family members over the past year? YES NO (Please circle)

11c. Have there been fights between your parents, or anyone else at home? YES NO (Please circle)

If yes, say who fights? \_\_\_\_\_

12. Is there any other event which has occurred over the past 12 months involving you, your family or close friends which should be mentioned? YES NO (Please circle)

If YES, describe: Date(s) Rate (circle)

\_\_\_\_\_ 1 2 3 4 5

\_\_\_\_\_ 1 2 3 4 5

If you have circled 4 or 5, were you upset about this for more than 2 weeks? YES NO (Please circle)

13. Thinking about things that upset you a lot, are there any other really important things that have happened to you before this last year? YES NO (Please circle)  
If YES, describe: Date(s) Rate (circle)

\_\_\_\_\_ 1 2 3 4 5

\_\_\_\_\_ 1 2 3 4 5

If you have circled 4 or 5, were you upset about this for more than 2 weeks?

## Social Measures

**Peer relationships** - *The next few questions are about difficult and upsetting things that sometimes happen. You don't have to answer if you don't want to. Tell the researcher if you feel upset.*

### 1. Bullying

*This school year, how often, if at all, have you been bullied in the following ways?*

Definition of BULLY - There are lots of different ways to bully someone, but a bully has some advantage (stronger, more popular, or something else), wants to hurt the other person (it's not an accident), and does so repeatedly and unfairly. Sometimes a group of students will bully another student.

1a. Physical Bullying (for example, someone hit, shoved, or kicked you, spat at you, beat you up, or damaged or took your things without permission) NEVER RARELY SOMETIMES OFTEN

Who was it?

1b. Verbal Bullying (for example, someone called you names, teased, embarrassed, threatened you, or made you do things you didn't want to do) NEVER RARELY SOMETIMES OFTEN

Who was it?

1c. Social Bullying (for example, someone left you out, excluded you, gossiped and spread rumours about you, or made you look foolish) NEVER RARELY SOMETIMES OFTEN

Who was it?

1d. Cyber Bullying (for example, someone used the computer or text messages to exclude, threaten, embarrass you, or hurt your feelings) NEVER RARELY SOMETIMES OFTEN

Who was it?

1e. Any other bullying that you haven't already told us about (someone making you do something you didn't like, or doing something to you that you didn't like) NEVER RARELY SOMETIMES OFTEN

Can you tell us what it was?

Can you tell us who it was?

(From: The Middle Years Development Instrument, Schonert-Reichl et al., 2010)

### 2. Loneliness

*How often do you feel:*

Alone?

NEVER RARELY SOMETIMES ALWAYS

(R) Close to people?

NEVER RARELY SOMETIMES ALWAYS

Left out?

NEVER RARELY SOMETIMES ALWAYS

(R) That there are people you can talk to?

NEVER RARELY SOMETIMES ALWAYS

(From the UCLA loneliness scale, Russell, D.W. (1996). UCLA loneliness scale (Version 3): Reliability, validity and factor structure. *Journal of Personality Assessment*, 66, 20-40).

### 3. Social Support

*Who can you really count on to:*

Listen when you want to talk

Make you feel better when you are upset

Care about you

Be there for you

List up to 10 people, using initials, and ask who they are (friend, parent, sibling, immediate family, extended family, teacher, other child, other adult)

(From the Emotional Support subscale of the Children's Social Support Questionnaire, Bogat, G.A., Chin, R., Sabbath, W. & Schwartz, C. (1983). *The Children's Social Support Questionnaire*. Technical Report No. 1. East Lansing: Michigan State University. Norms from Kriegler, J. A. (1985). *A developmental analysis of Children's social support networks*. Unpub MSc thesis, Michigan State University).



**What I think about myself and other people (BCSS, Fowler et al., 2006)**

Here is a list of things people can think about themselves and other people. For each one, put a circle around 'yes' if you think it is true and 'no' if you think it is not true. If you think it is true, then put a circle round a number to show how much you think it is true. Don't spend too long on any question. It is OK to put the first thing that comes into your mind. There are no right or wrong answers.

			Believe it slightly	Believe it moderately	Believe it very much	I believe it totally
<i>ME</i>						
I am unloved	NO	YES→	1	2	3	4
I am worthless	NO	YES→	1	2	3	4
I am weak	NO	YES→	1	2	3	4
I am vulnerable	NO	YES→	1	2	3	4
I am bad	NO	YES→	1	2	3	4
I am a failure	NO	YES→	1	2	3	4
I am respected	NO	YES→	1	2	3	4
I am valuable	NO	YES→	1	2	3	4
I am talented	NO	YES→	1	2	3	4
I am successful	NO	YES→	1	2	3	4
I am good	NO	YES→	1	2	3	4
I am interesting	NO	YES→	1	2	3	4
<i>OTHER PEOPLE</i>						
Other people are hostile or unfriendly	NO	YES→	1	2	3	4
Other people are unkind	NO	YES→	1	2	3	4
Other people are unforgiving	NO	YES→	1	2	3	4
Other people are bad	NO	YES→	1	2	3	4
Other people are devious or liars	NO	YES→	1	2	3	4
Other people are nasty	NO	YES→	1	2	3	4
Other people are fair	NO	YES→	1	2	3	4
Other people are good	NO	YES→	1	2	3	4
Other people are trustworthy	NO	YES→	1	2	3	4
Other people are accepting	NO	YES→	1	2	3	4
Other people are supportive	NO	YES→	1	2	3	4
Other people are truthful	NO	YES→	1	2	3	4

### RSQ: What I do when I feel sad or afraid

People think and do many different things when they feel sad or afraid.

Below is a list of things that people might think and do when they feel sad or afraid. We would like to know if you think or do any of these things. After each of these things are some answers.

Please ring the answer for how often you generally do these things.

		Never	Some- times	Often	Always
1	I think about how lonely I feel.				
2	I think that I won't be able do my work at school because I feel so bad.				
3	I think about how tired and achy I feel.				
4	I think about how hard it is concentrate.				
5	I keep thinking about how fed-up I am.				
6	I think hard about the things that have made me sad or afraid.				
7	I think about how I don't care about anything anymore.				
8	I ask myself why I am not interested in anything.				
9	I wonder why I keep getting sad or afraid.				
10	I go away on my own and wonder why I feel like this.				
11	I write down what I am thinking.				
12	I think about things that have happened recently and wish they could have gone better.				
13	I wonder why I feel so different to other people.				
14	I keep thinking about how about sad or afraid I feel.				
15	I think about everything that is bad about me.				
16	I think about how I don't want to do anything.				
17	I wonder what is wrong with me for me to be afraid or sad.				
18	I go somewhere on my own and think about how I feel.				
19	I get angry with myself.				
20	I listen to sad music				
21	I stay on my own and think about what is making me sad or afraid.				
22	I try and work out what part of me is making me sad or afraid.				

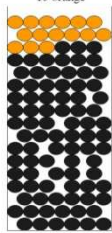
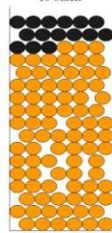
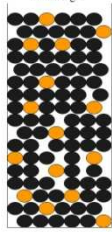
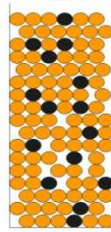















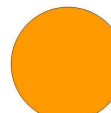




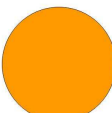





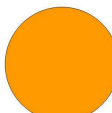






### The Self Reflection and Insight Scale.

This questionnaire is about self-reflection. But what is self-reflection? Self-reflection means being interested in or thinking about how you think, feel and do things. That is to say, you often spend time thinking about the 'what' and 'why' of your thoughts, feelings and behaviour.

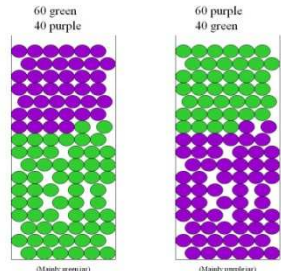
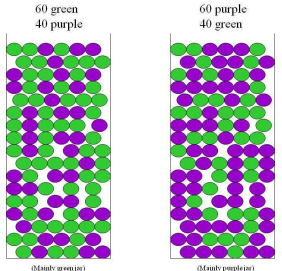















Please read the following statements and select the answer which best matches how much you agree or disagree with each of the statements. There are no right or wrong answers. Be sure to answer every item and select only one answer per item.

	Strongly Agree	Agree	Neither agree not disagree	Disagree	Strongly disagree
I don't often think about my thoughts.					
I'm not really interested in studying my behaviour.					
I'm often confused by how I feel about something.					
I find it really interesting to study what I think about.					
I rarely spend time 'self-reflecting' (thinking about myself and what I have done).					
I often notice that I'm feeling something, but I don't often know what exactly I'm feeling.					
I often study my feelings.					
My behaviour often puzzles me.					
It's important for me to try to understand what my feelings mean.					
I don't really think about why I behave in the way that I do.					
Thinking about my thoughts makes me more confused.					
I really want to understand how my mind works.					
I often take time to think back on my thoughts.					
I often find it difficult to really understand how I feel about things.					
It's important for me to be able to understand where my thoughts come from.					
I often think about how I feel about things.					
I usually know why I feel the way I feel.					

## Beads Task 85:15

<p>Beads game</p> <p>Press the space bar for the next screen.</p>	<p>There are two jars. The <b>mainly orange jar</b> has 85 orange beads and 15 black beads. The <b>mainly black jar</b> has 85 black beads and 15 orange beads.</p> <p>Press the space bar for the next screen</p>	<div> <div>85 black 15 orange</div>  <div>(Mainly black jar)</div> </div> <div> <div>85 orange 15 black</div>  <div>(Mainly orange jar)</div> </div>
<p>The computer has mixed up the beads in the jars.</p> <p>Press the space bar for the next screen</p>	<div> <div>85 black 15 orange</div>  <div>(Mainly black jar)</div> </div> <div> <div>85 orange 15 black</div>  <div>(Mainly orange jar)</div> </div>	<p>The computer has randomly chosen one of the jars. The computer will take beads from the chosen jar and show them on the screen. The beads will always come from the same jar and <b>will be put back afterwards</b> so that the number of beads stays the same.</p> <p>Press the space bar for the next screen</p>
<p>It is your job to decide which jar the beads have come from. You can see as many beads as you like before deciding. After each bead has been shown on the screen you can ask for another bead or you can tell me that you know which jar the beads are coming from and you can tell me whether it is the <u>mainly orange jar</u> or the <u>mainly black jar</u>.</p> <p>Press the space bar for the next screen</p>	<p>You will now see the first bead.</p> <p>Remember you can see as many beads as you like before you decide which jar the beads are from.</p> <p><b>Only decide when you are certain.</b></p> <p>Press the space bar for the next screen</p>	<p>The first bead is</p>  <p>Press space bar to continue</p> <div>BEADS PREVIOUSLY SEEN</div>
<p>The next bead is</p>	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <div>BEADS PREVIOUSLY SEEN</div> 	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <div>BEADS PREVIOUSLY SEEN</div>  
<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <div>BEADS PREVIOUSLY SEEN</div>   	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <div>BEADS PREVIOUSLY SEEN</div>    	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <div>BEADS PREVIOUSLY SEEN</div>    
<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <div>BEADS PREVIOUSLY SEEN</div>     	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <div>BEADS PREVIOUSLY SEEN</div>      	<p>Continues to a maximum of 20 beads displayed.</p> <p>'The next bead is' inserted between each slide.</p>

## Beads Task 60:40

<p>Beads game</p> <p>Press the space bar for the next screen</p>	<p>There are two jars. <b>The mainly green jar</b> has 60 green and 40 purple beads. The <b>mainly purple jar</b> has 60 purple and 40 green beads</p> <p>Press the space bar for the next screen</p>	
<p>The computer has mixed up the beads in the jars.</p> <p>Press the space bar for the next screen</p>		<p>The computer has randomly chosen one of the jars. The computer will take beads from the chosen jar and show them on the screen. The beads will always come from the same jar and <b>will be put back afterwards</b> so that the number of beads stays the same.</p> <p>Press the space bar for the next screen</p>
<p>It is your job to decide which jar the beads have come from. You can see as many beads as you like before deciding. After each bead has been shown on the screen you can ask for another bead or you can tell me that you know which jar the beads are coming from and you can tell me whether it is the <b>mainly green jar</b> or the <b>mainly purple jar</b>.</p> <p>Press the space bar for the next screen</p>	<p>You will now see the first bead.</p> <p>Remember you can see as many beads as you like before you decide which jar the beads are from.</p> <p><b>Only decide when you are certain.</b></p> <p>Press the space bar for the next screen</p>	<p>The first bead is</p>  <p>Press space bar to continue</p> <p>BEADS PREVIOUSLY SEEN:</p>
<p>The next bead is</p> <p>press space bar to continue</p>	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <p>BEADS PREVIOUSLY SEEN:</p> 	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <p>BEADS PREVIOUSLY SEEN:</p> 
<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <p>BEADS PREVIOUSLY SEEN:</p> 	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <p>BEADS PREVIOUSLY SEEN:</p> 	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <p>BEADS PREVIOUSLY SEEN:</p> 
<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <p>BEADS PREVIOUSLY SEEN:</p> 	<p>Do you want to see more beads or to decide now?</p> <p>Press space bar to continue</p>  <p>BEADS PREVIOUSLY SEEN:</p> 	<p>Continues to a maximum of 20 beads displayed.</p> <p>'The next bead is' inserted between each slide.</p>

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## Appendix 3: Social Problem Solving Task

### Social Problem Solving Task

#### Instructions

Note that there are female and male versions of this task.

This task is about working out how to solve problems that people might have at home or school. I am going to tell you about three problems, and ask you how people might solve it. Have you got any questions before we get started?

[Read story]

Can you tell me all the different ways that you think [name of character in story] could solve the problem.

If this happened to you which of those possible solutions would you prefer to use?

What are the good things that might happen if you [summarise preferred solution]?

What possible bad things might happen if you [summarise preferred solution]?

Is there anything that might get in the way of [summarise preferred solution]?

[move onto next story]

### Social Problem Solving Task Scoring Manual Draft 1

#### General principles of scoring

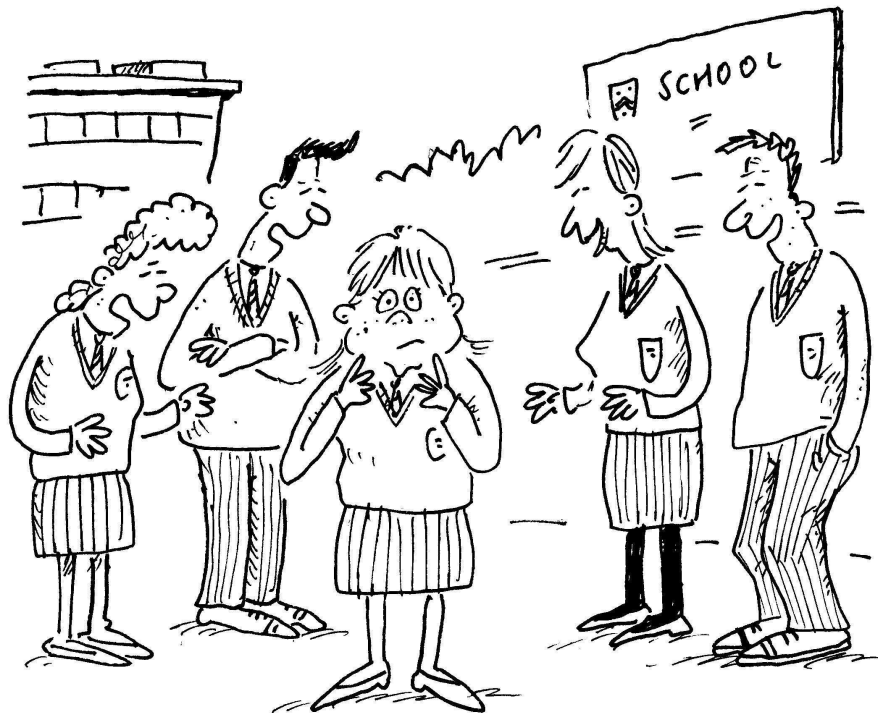
- Directly assertive involves managing situation directly with people involved.
- Indirectly assertive involves recruiting others for support or managing independently but with some distance (eg through the use of text or internet rather than phone call or face to face contact).
- Passive reflects avoidance of a situation
- Passive Aggressive

<b>1a Bullying</b> Chanelle/Oscar has been having a hard time in the playground at school. A group of kids from the year above have been calling him/her names and threatening to hurt him/her. How could Chanelle/Oscar deal with this problem?	
Directly Assertive (DA)	Speak to bullies
Indirectly Assertive (IA)	Speak to teacher/parent, Speak to a friend, Get help from another person
Passive (P)	Walk away, run away, ignore, change school
Aggressive (A)	Hit, attack, swear, cuss
Passive Aggressive (PA)	Block the bullies way in the corridor, give the bully dirty looks, spread rumours about the bullies.
Unscorable	
<b>1b Ignoring</b> Jayden/Paige is worried that his/her best friend is annoyed with him/her. He/she thinks that they have been ignoring phone calls and text messages and he/she isn't sure why. How could Jayden/Paige deal with this problem?	
Directly Assertive (DA)	Contact friend by phone or in person
Indirectly Assertive (IA)	Text friend, Ask another person to speak to friend
Passive (P)	Wait for them to call
Aggressive (A)	Hit, attack, swear, cuss
Passive Aggressive (PA)	Ignore their calls too when they start calling so that they know how it feels
Unscorable	
<b>1c Sneaking out</b> Jamal/Aleesha thinks that his/her brother is lying to their Mum about sneaking out when they are not allowed to. How could Jamal/Aleesha deal with this problem?	
Directly Assertive (DA)	Speak to brother, Speak to mother
Indirectly Assertive (IA)	Watch/Spy on brother/Film brother/ Follow brother Get Mum to be in the right place to catch brother
Passive (P)	Do nothing
Aggressive (A)	Hit, shout at, block the way
Passive Aggressive (PA)	Stop talking to brother, Pull faces at him, Sulk, lock doors/windows
Unscorable	

1a. Chanelle has been having a hard time in the playground at school.

A group of kids from the year above have been calling her names and threatening to hurt her.

How could Chanelle deal with this problem?

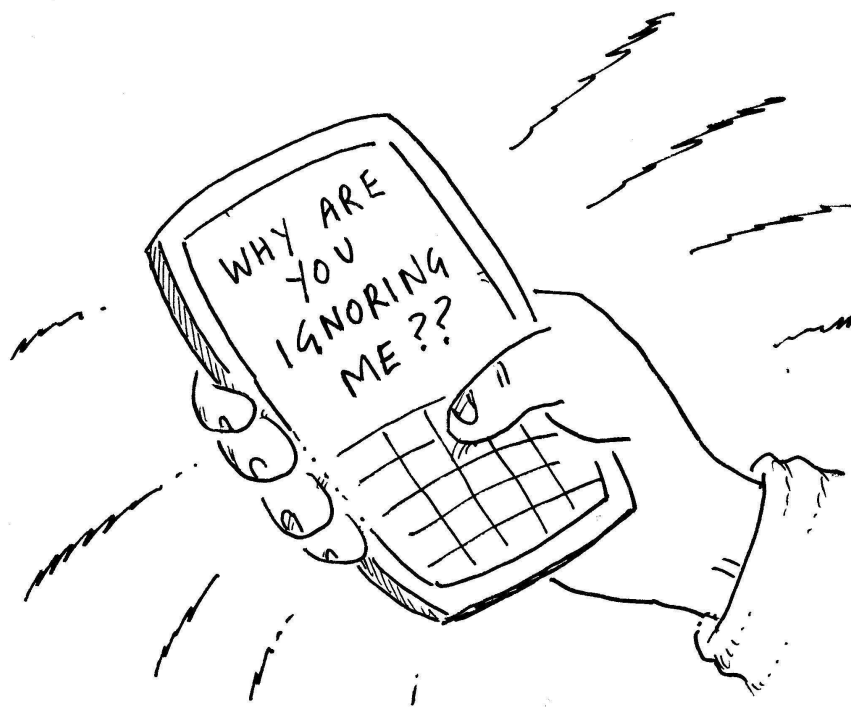




1b. Paige is worried that her best friend is annoyed with her.

She thinks that they have been ignoring phone calls and text messages and she isn't sure why.

How could Paige deal with this problem?



1c. Aleesha thinks that her brother is lying to their Mum about sneaking out when they are not allowed to.

How could Aleesha deal with this problem?



1a. Oscar has been having a hard time in the playground at school.

A group of kids from the year above have been calling him names and threatening to hurt him.

How could Oscar deal with this problem?



1b. Jayden is worried that his best friend is annoyed with him.

He thinks that they have been ignoring phone calls and text messages and he isn't sure why.

How could Jayden deal with this problem?



1c. Jamal thinks that his brother is lying to their Mum about sneaking out when they are not allowed to.

How could Jamal deal with this problem?



## Appendix 4: Z scores for skew and kurtosis

Criteria for normality: z score  $\leq 2.58$ . Scores outside this limit indicated by bold type

		Skew			Kurtosis		
		Statistic	Std. Error	z skewness	Statistic	Std. Error	z kurtosis
<b>CC</b>	Age	.104	.580	0.178882	-1.068	1.121	-0.9532
	PLE YP conviction score	.837	.580	1.443419	-.025	1.121	-0.02252
	<b>PLE YP frequency score</b>	2.093	.580	<b>3.608655</b>	4.147	1.121	<b>3.699763</b>
	<b>PLE YP upset score</b>	2.894	.580	<b>4.987987</b>	8.868	1.121	<b>7.911638</b>
	<b>PLE YP impact score</b>	1.792	.580	<b>3.088245</b>	2.625	1.121	2.341874
	SDQ YP emotional	-.147	.580	-0.25291	-.325	1.121	-0.2896
	SDQ YP conduct	.118	.580	0.203376	-1.598	1.121	-1.42562
	SDQ YP hyperactivity	.109	.580	0.187408	-.811	1.121	-0.72387
	SDQ YP peer problems	.141	.580	0.243345	-.847	1.121	-0.75604
	SDQ YP prosocial	-.555	.580	-0.95588	.548	1.121	0.488572
	SDQ YP total difficulties	.333	.580	0.573516	-.836	1.121	-0.74584
	SDQ YP impact	.323	.580	0.557609	-.736	1.121	-0.65659
	<b>MFQ YP Total</b>	1.503	.580	<b>2.590736</b>	1.929	1.121	1.720731
	Spence YP Generalised Anxiety	.868	.580	1.496135	1.159	1.121	1.034257
	Spence YP Obsessive Compulsive	.698	.580	1.204049	.394	1.121	0.351343
	<b>Spence YP Panic</b>	2.090	.580	<b>3.60265</b>	5.038	1.121	<b>4.494781</b>
	Spence YP Separation Anxiety	.549	.580	0.946299	-.318	1.121	-0.28401
	Spence YP Social Phobia	.334	.580	0.575783	-.052	1.121	-0.04646
	Spence YP total	.648	.580	1.117197	-.152	1.121	-0.13567
	CRSQ	.002	.580	0.00315	-.056	1.121	-0.04988
	BCSS Positive Self	-.714	.580	-1.23126	1.515	1.121	1.351949
	BCSS Negative Self	1.361	.580	2.346511	.282	1.121	0.251692
	BCSS Positive Others	.041	.580	0.070841	-.318	1.121	-0.2833
	<b>BCSS Negative Others</b>	1.630	.580	<b>2.809922</b>	2.680	1.121	2.391004
	<b>Bullying</b>	1.657	.580	<b>2.857129</b>	2.558	1.121	2.281874
	Loneliness	.908	.580	1.565937	.779	1.121	0.695135
	Social Support	.907	.580	1.56302	.477	1.121	0.425974
	Wilkinson Life Events	.931	.580	1.6048	.496	1.121	0.442529
	All life Events	.710	.580	1.223986	-.521	1.121	-0.46472
	SRIS self reflection subscale	1.329	.616	2.156903	1.405	1.191	1.179517
	SRIS insight subscale	.529	.616	0.858034	.392	1.191	0.329249
	Parent Emotional Symptoms	.333	.580	0.574342	-.946	1.121	-0.84428
	Parent Conduct problems	1.071	.580	1.845386	1.477	1.121	1.317821

PLE-ED	Parent Hyperactivity	-.040	.580	-0.06912	-1.521	1.121	-1.35654
	Parent Peer problems	.444	.580	0.764758	-1.231	1.121	-1.09829
	Parent Prosocial	-.832	.580	-1.43501	-.311	1.121	-0.27763
	Parent SDQ total	.396	.580	0.682425	-.359	1.121	-0.32033
	Parent SDQ Impact	-.065	.580	-0.11138	-.714	1.121	-0.63712
	<b>Parent PLE Conviction Score</b>	3.016	.580	<b>5.198685</b>	9.907	1.121	<b>8.838307</b>
	<b>Parent PLE Frequency Score</b>	2.919	.580	<b>5.031531</b>	8.388	1.121	<b>7.483675</b>
	<b>Parent PLE Upset Score</b>	2.113	.580	<b>3.6416</b>	3.357	1.121	<b>2.994945</b>
	<b>Parent PLE Impact Score</b>	1.779	.580	<b>3.066825</b>	1.567	1.121	1.398287
	Parent MFQ total	1.220	.580	2.102836	.437	1.121	0.389803
	Parent GAD	1.256	.580	2.165758	1.320	1.121	1.177676
	<b>Parent Panic</b>	1.604	.580	<b>2.764254</b>	1.215	1.121	1.084358
	Parent Separation Anxiety	.803	.580	1.384714	.175	1.121	0.155993
	Parent Physical Injury	.154	.580	0.265217	-.194	1.121	-0.17275
	<b>Parent Social Phobia</b>	1.514	.580	<b>2.609893</b>	2.521	1.121	2.249056
	Parent OCD	.893	.580	1.538896	-.144	1.121	-0.12812
	<b>Parent Spence total</b>	1.616	.580	<b>2.784799</b>	2.864	1.121	2.555401
	BPVS Raw	-.533	.580	-0.91959	.021	1.121	0.018646
	BPVS Standardised	-.017	.580	-0.02971	-.916	1.121	-0.81689
	RAVLT trial one	-.799	.580	-1.37689	.935	1.121	0.834288
	RAVLT list B	.511	.580	0.880044	-1.411	1.121	-1.25913
	RAVLT trial six	-1.218	.580	-2.09916	1.325	1.121	1.181686
	RAVLT delayed recall	-1.355	.580	-2.33583	1.375	1.121	1.226836
	RAVLT recognition	-1.076	.597	-1.80148	-.136	1.154	-0.11798
	RAVLT total learning	-1.924	.580	<b>-3.31692</b>	5.017	1.121	<b>4.476225</b>
	SPST Total Relevant Means	.749	.597	1.253899	.062	1.154	0.053885
	Total Irrelevant Means	.	.	.	.	.	.
	SPST Total DA	-.283	.597	-0.47383	1.299	1.154	1.125621
	SPST Total IA	.575	.597	0.963158	.133	1.154	0.115502
	SPST Total P	1.652	.597	<b>2.766179</b>	2.670	1.154	2.31362
	SPST Total A	3.128	.597	<b>5.235791</b>	10.345	1.154	<b>8.964223</b>
	SPST Total PA	3.742	.597	<b>6.263447</b>	14.000	1.154	<b>12.13119</b>
	SPST Total U	.	.	.	.	.	.
	SPST Total +ve Outcome	1.553	.597	<b>2.59899</b>	1.628	1.154	1.410478
	SPST Total -ve Outcome	-.743	.597	-1.24318	.254	1.154	0.219692
	SPST Total Barriers	-.026	.597	-0.04282	-1.063	1.154	-0.92102
	Age	-.154	.597	-0.25722	-1.665	1.154	-1.44314
	PLE YP conviction	.168	.597	0.281887	-.883	1.154	-0.76552
	PLE YP frequency	1.337	.597	2.238825	2.751	1.154	2.383378
	PLE YP upset	.062	.597	0.104335	-1.143	1.154	-0.9902
	PLE YP impact	.753	.597	1.260554	.119	1.154	0.103241
	PLE YP conviction score	.168	.597	0.281887	-.883	1.154	-0.76552

PLE YP frequency score	1.337	.597	2.238825	2.751	1.154	2.383378
PLE YP upset score	.062	.597	0.104335	-1.143	1.154	-0.9902
PLE YP impact score	.753	.597	1.260554	.119	1.154	0.103241
SDQ YP emotional	.661	.597	1.106472	-1.160	1.154	-1.0051
SDQ YP conduct	1.032	.597	1.727144	.572	1.154	0.495305
SDQ YP hyperactivity	-.439	.597	-0.73479	-.329	1.154	-0.28516
SDQ YP peer problems	1.056	.597	1.767122	1.459	1.154	1.263942
SDQ YP prosocial	-.704	.597	-1.17858	-.863	1.154	-0.74792
SDQ YP total difficulties	.350	.597	0.585846	-1.239	1.154	-1.07341
SDQ YP impact	-.445	.597	-0.74531	-.125	1.154	-0.10832
MFQ YP Total	.135	.597	0.226684	-1.607	1.154	-1.39269
Spence YP Generalised Anxiety	-.178	.597	-0.29811	-1.346	1.154	-1.16597
Spence YP Obsessive Compulsive	.259	.597	0.434257	-.851	1.154	-0.73774
Spence YP Panic	.349	.597	0.583912	-.661	1.154	-0.5725
Spence YP Separation Anxiety	1.131	.597	1.893611	1.016	1.154	0.880034
Spence YP Social Phobia	-.594	.597	-0.99353	.140	1.154	0.120925
Spence YP total	.639	.597	1.069179	-.250	1.154	-0.21674
<b>CRSQ I</b>	1.643	.597	<b>2.750309</b>	4.080	1.154	<b>3.535408</b>
BCSS Positive Self	-.335	.597	-0.56104	-.885	1.154	-0.76685
<b>BCSS Negative Self</b>	1.734	.597	<b>2.903074</b>	3.536	1.154	<b>3.063876</b>
BCSS Positive Others	-.103	.597	-0.17174	-.800	1.154	-0.69307
BCSS Negative Others	.598	.616	0.970904	-.762	1.191	-0.63981
Bullying	.529	.597	0.885508	-.736	1.154	-0.63758
Loneliness	-.614	.597	-1.02782	.726	1.154	0.629207
Social Support	1.012	.597	1.694771	2.358	1.154	2.043137
Wilkinson Life Events	.803	.597	1.343844	.399	1.154	0.345872
All life Events	.231	.597	0.386169	-.568	1.154	-0.49226
SRIS self reflection subscale	.081	.597	0.136263	-.912	1.154	-0.7901
SRIS insight subscale	.185	.597	0.308891	.006	1.154	0.005387
Parent Emotional Symptoms	-.311	.597	-0.52059	-1.540	1.154	-1.33437
Parent Conduct problems	.403	.597	0.675243	1.492	1.154	1.293173
Parent Hyperactivity	-.778	.597	-1.30211	-.401	1.154	-0.34766
Parent Peer problems	-.203	.597	-0.33928	-1.516	1.154	-1.31335
Parent Prosocial	-.930	.597	-1.55728	.193	1.154	0.167382
Parent SDQ total	.067	.597	0.112774	-1.514	1.154	-1.31149
Parent SDQ Impact	.022	.597	0.037364	-.791	1.154	-0.68548
<b>Parent PLE Conviction Score</b>	2.109	.616	<b>3.422624</b>	3.168	1.191	<b>2.659868</b>
<b>Parent PLE Frequency Score</b>	2.471	.616	<b>4.00924</b>	5.687	1.191	<b>4.775075</b>
<b>Parent PLE Upset Score</b>	2.203	.616	<b>3.574668</b>	3.803	1.191	<b>3.19364</b>
<b>Parent PLE Impact Score</b>	2.569	.616	<b>4.167934</b>	6.141	1.191	<b>5.15706</b>
Parent MFQ total	1.592	.597	2.665681	1.963	1.154	1.70128



Parent GAD	.451	.597	0.755079	-.779	1.154	-0.67483
Parent Panic	.814	.597	1.361858	-.812	1.154	-0.70331
Parent Separation Anxiety	.672	.597	1.124703	-.544	1.154	-0.47097
Parent Physical Injury	.034	.597	0.057682	-1.106	1.154	-0.95807
Parent Social Phobia	.855	.597	1.430432	1.585	1.154	1.373317
Parent OCD	.740	.597	1.238878	-.969	1.154	-0.83935
Parent Spence total	.721	.597	1.207099	-.506	1.154	-0.43816
BPVS Raw	.380	.597	0.635661	-.371	1.154	-0.32149
BPVS Standardised	.034	.597	0.057156	-1.609	1.154	-1.3943
RAVLT trial one	-.436	.597	-0.72922	-.318	1.154	-0.27587
RAVLT list B	-.673	.597	-1.12577	.710	1.154	0.615576
RAVLT trial six	-.548	.597	-0.9175	-.490	1.154	-0.42436
RAVLT delayed recall	-.386	.597	-0.64578	-.674	1.154	-0.58373
RAVLT recognition	-1.940	.597	-3.24721	2.770	1.154	2.400561
RAVLT total learning	-.150	.597	-0.25093	-.889	1.154	-0.77058
SPST Total Relevant Means	.864	.616	1.401522	.330	1.191	0.276919
Total Irrelevant Means	2.682	.616	<b>4.352163</b>	6.964	1.191	<b>5.848044</b>
SPST Total DA	.430	.616	0.698309	-.394	1.191	-0.33073
SPST Total IA	.527	.616	0.854677	-.500	1.191	-0.42018
SPST Total P	2.048	.616	<b>3.323078</b>	5.404	1.191	<b>4.537657</b>
SPST Total A	.863	.616	1.399582	-.025	1.191	-0.0206
SPST Total PA	2.555	.637	<b>4.009327</b>	6.242	1.232	<b>5.065719</b>
SPST Total U	.	.	.	.	.	.
SPST Total +ve Outcome	.882	.616	1.43144	-.159	1.191	-0.13374
SPST Total -ve Outcome	1.315	.616	2.132902	2.372	1.191	1.991404
SPST Total Barriers	.948	.616	1.538546	1.569	1.191	1.317775

## Appendix 5: Non Parametric tests of group effect for non-normally distributed variables

Parametric – ANOVAs

Non-parametric – Kruskal-Wallis tests

	Significance of group effect	
	Parametric	Non-parametric
	<i>p</i>	<i>p</i>
PLE self report frequency	<b>&lt;.001</b>	<b>&lt;.0001</b>
PLE self report upset	<b>&lt;.001</b>	<b>&lt;.0001</b>
PLE self report impact	<b>&lt;.001</b>	<b>&lt;.0001</b>
PLE Parent report Conviction	.585	1.00
PLE Parent report Frequency	.685	.512
PLE Parent report Distress	.545	.525
PLE Parent report Impact	.616	.918
MFQ self report Total	<b>.006</b>	<b>.006</b>
Spence self report Panic	.077	.100
Spence Parent report Panic	.235	.145
Spence Parent report Social Phobia	.374	.186
Spence Parent report total	.249	.132
BCSS Negative Others	<b>.013</b>	<b>.017</b>
BCSS Negative Self	<b>.054</b>	<b>.039</b>
Bullying	<b>.034</b>	<b>.032</b>
RAVLT total learning	.629	.541
CRSQ Total	<b>.001</b>	<b>.001</b>
Irrelevant means	.161	.135
Total passive	.316	.334
Total aggressive	.756	.587
Total passive aggressive	.338	.431
Total positive outcomes	.147	.097

## Appendix 6: Analysis of PLEs in preceding year

These results mirror the analysis of PLEs in the two weeks prior to assessment with the exception that there was no significant correlation was found between PLEs in the year before assessment and bullying, life events, positive schematic beliefs about others and JTC bias. However, the correlations with PLEs in the previous year and in the previous fortnight with each of these variables was compared (Steiger, 1980) and the results of this analysis did not indicate that any of the differences in size of correlation co-efficient were significant (all  $p > .08$ , see table below).

		MFQ	Spence total	Bullying	Loneliness	Social Support	Life Events
Total	<i>r</i>	<b>.563</b>	<b>.573</b>	.318	<b>.413</b>	-.263	.300
PLE	<i>p</i>	<b>.001</b>	<b>.001</b>	.093	<b>.026</b>	.169	.114
	<i>N</i>	29	29	29	29	29	29
		BCSS Positive Self	BCSS Negative Self	BCSS Positive Others	BCSS Negative Others	CRSQ	
Total	<i>r</i>	-.122	.264	-.183	<b>.410</b>	<b>.566</b>	
PLE	<i>p</i>	.529	.167	.342	<b>.030</b>	<b>.001</b>	
	<i>N</i>	29	29	29	28	29	
		BPVS Raw	JTC bias 85:15*	JTC bias 60:40*	SRIS Insight	SRIS Reflection	
Total	<i>r</i>	.111	.296	.217	.209	-.192	
PLE	<i>p</i>	.566	.142	.288	.296	.337	
	<i>N</i>	29	26	26	27	27	

Spearman's rho correlation coefficients of the relationship between self-reported PLEs in the year prior to assessment and self-reported clinical, social and environmental, cognitive and neuropsychological variables. Significant associations indicated by bold text. \*Point Biserial correlation

	<i>z</i>	<i>p</i>
Bullying	1.724	.084
Life events	0.371	.711
BCSS positive others	1.132	.257
JTC bias	1.406	.159

Comparison of correlations between variables and PLEs in the year and in the fortnight preceding assessment.

Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, 87, 245–251

**Appendix 7 Multicollinearity statistics variables in regression model**

	Collinearity Statistics	
	Tolerance	Variance Inflation Factor
JTC 85:15 bias	.255	3.920
Life Events Interview	.627	1.595
Loneliness	.203	4.925
Bullying	.382	2.615
BCSS Negative Others	.344	2.909
BCSS Negative Self	.216	4.629
BCSS Positive Others	.281	3.554
<b>CRSQ</b>	<b>.098</b>	<b>10.160</b>
Spence total	.469	2.134
MFQ total	.230	4.343

Multicollinearity statistics for variables entered into the regression model. Factors with VIF > 10 or tolerance <.2 indicated by bold text